FIG. 1

```
   1 catcatcaat aatatacctt atagatggaa tggtgccaat atgtaaatga ggtgatttta
  61 aaaagtgtgg gccgtgtggt gattggctgt ggggttaacg gttaaaaggg gcggcgcggc
 121 cgtgggaaaa tgacgtttta tggggtgtgga gtttttttgc aagttgtcgc gggaaatgtt
 181 acgcataaaa aggcttcttt tctcacggaa ctacttagtt ttcccacggt atttaacagg
 241 aaatgaggta gttttgaccg gatgcaagtg aaaattgctg attttcgcgc gaaaactgaa
 301 tgaggaagtg ttttttctgaa taatgtggta tttatggcag ggtggagtat ttgttcaggg
 361 ccaggtagac tttgacccat tacgtggagg tttcgattac cgtgtttttt acctgaattt
 421 ccgcgtaccg tgtcaaagtc ttctgtttt acgtaggtgt cagctgatcg ctagggtatt
 481 tatacctcag ggtttgtgtc aagaggccac tcttgagtgc cagcgagaag agttttctcc
 541 tctgcgccgg cagtttaata ataaaaaaat gagagatttg cgatttctgc ctcaggaaat
 601 aatctctgct gagactggaa atgaaatatt ggagcttgtg gtgcacgccc tgatgggaga
 661 cgatccggag ccacctgtgc agctttttga gcctcctacg cttcaggaac tgtatgattt
 721 agaggtagag ggatcggagg attctaatga ggaagctgtg aatggctttt ttaccgattc
 781 tatgctttta gctgctaatg aaggattaga attagatccg cctttggaca ctttcaatac
 841 tccaggggtg attgtggaaa gcggtacagg tgtaagaaaa ttacctgatt tgagttccgt
 901 ggactgtgat ttgcactgct atgaagacgg gtttcctccg agtgatgagg aggaccatga
 961 aaaggagcag tccatgcaga ctgcagcggg tgagggagtg aaggctgcca atgttggttt
1021 tcagttggat tgcccggagc ttctggacat ggctgtaagt cttgtgaatt tcacaggaaa
1081 aatactggag taaaggaact gttatgttcg ctttttgttat atgaaaaccc actgccactt
1141 tatttacagt aaagtgtgtt taagttaaaa tttaaaggaa tatgctgttt ttcacatgta
1201 tattggagtgt gagttttgtg cttcttatta taagtcctgt gtctgatgct gatgaatcac
1261 catctcctga ttctactacc tcacctcctg atattcaagc acctgttcct gtggacgtgc
1321 gcaagcccat tcctgtgaag cttaagcctg ggaaacgtcc agcagtggag aaacttgagg
1381 acttgttaca gggtgggggac ggacctttgg acttgagtac acggaaacgt ccaagacaat
1441 aagtgttcca tatccgtgtt tacttaaggt gacgtcaata tttgtgtgag agtgcaatgt
1501 aataaaaata tgttaactgt tcactggttt ttattgcttt ttgggcgggg actcaggtat
1561 ataagtagaa gcagacctgt gtggttagct cataggagct ggctttcatc catggaggtt
1621 tgggccattt tggaagacct taggaagact aggcaactgt tagagacgc ttcggacgga
1681 gtctccggtt tttggagatt ctggttcgct agtgaattag ctagggtagt ttttaggata
1741 aaacaggact ataaacaaga atttgaaaag ttgttggtag attgcccagg actttttgaa
1801 gctcttaatt tgggccatca ggttcacttt aaagaaaaag ttttatcagt tttagacttt
1861 tcaacccag gtagaactgc tgctgctgtg gcttttctta cttttatatt agataaatgg
1921 atcccgcaga ctcatttcag caggggatac gtttttggatt tcatagccac agcattgtgg
1981 agaacatgga aggttcgcaa gatgaggaca atcttaggtt actggccagt gcagcctttg
2041 ggtgtagcgg gaatcctgag gcatccaccg gtcatgccag cggttctgga ggaggaacag
2101 caagaggaca acccgagagc cggcctggac cctccagtgg aggaggcgga gtagctgact
2161 tgtctcctga actgcaacgg gtgcttactg gatctacgtc cactggacgg gatagggcg
2221 ttaagaggga gagggcatcc agtggtactg atgctagatc tgagttggct ttaagtttaa
2281 tgagtcgcag acgtcctgaa accatttggt ggcatgaggt tcagaaagag ggaagggatg
2341 aagtttctgt attgcaggag aaatattcac tggaacaggt gaaaacatgt tggttggagc
2401 cagaggatga ttgggaggtg gccattaaaa attatgccaa gatagctttg aggcctgata
2461 aacagtataa gatcagtaga cggattaata tccggaatgc ttgttacata tctggaaatg
2521 gggctgaggt ggtaatagat actcaagaca agacagttat tagatgctgc atgatggata
2581 tgtggcctgg agtagtcggt atggaagcag tcacttttgt aaatgttaag tttaggggag
2641 atggttataa tggaatagtg tttatggcca ataccaaact tatattgcat ggttgtagct
2701 ttttggtttt caacaatacc tgtgtagatg cctggggaca ggttagtgta cggggggtgta
2761 gtttctatgc gtgttggatt gccacagctg gcagaaccaa gagtcaattg tctctgaaga
2821 aatgcatatt ccaaagatgt aacctgggca ttctgaatga aggcgaagca agggtccgtc
2881 actgcgcttc tacagatact ggatgtttta ttttaattaa gggaaatgcc agcgtaaagc
2941 ataacatgat ttgtggtgct tccgatgaga ggccttatca aatgctcact tgtgctggtg
3001 ggcattgtaa tatgctggct actgtgcata ttgtttccca tcaacgcaaa aaatggcctg
3061 ttttttgatca caatgtgttg accaagtgca ccatgcatgc aggtgggcgt agaggaatgt
3121 ttatgcctta ccagtgtaac atgaatcatg tgaaagtgtt gttggaacca gatgccttt
3181 ccagaatgag cctaacagga atctttgaca tgaacacgca aatctggaag atcctgaggt
3241 atgatgatac gagatcgagg gtgcgcgcat gcgaatgcgg aggcaagcat gccaggttcc
3301 agccggtgtg tgtagatgtg accgaagatc tcagaccgga tcatttggtt attgcccgca
3361 ctggagcaga gttcggatcc agtggagaag aaactgacta aggtgagtat tgggaaaact
3421 ttggggtggg attttcagat ggacagattg agtaaaaatt tgttttttct gtcttgcagc
3481 tgacatgagt ggaaatgctt cttttaaggg gggagtcttc agcccttatc tgacagggcg
3541 tctcccatcc tgggcaggag ttcgtcagaa tgttatggga tctactgtgg atggaagacc
3601 cgttcaaccc gccaattctt caacgctgac ctatgctact ttaagttctt cacctttgga
3661 cgcagctgca gccgctgccg ccgcctctgt cgccgctaac actgtgcttg gaatgggtta
3721 ctatggaagc atcgtggcta attccacttc ctctaataac ccttctacac tgactcagga
```

FIG. 2A-1

```
3781  caagttactt  gtccttttgg  cccagctgga  ggctttgacc  caacgtctgg  gtgaactttc
3841  tcagcaggtg  gccgagttgc  gagtacaaac  tgagtctgct  gtcggcacgg  caaagtctaa
3901  ataaaaaaaa  ttccagaatc  aatgaataaa  taaacgagct  tgttgttgat  ttaaaatcaa
3961  gtgttttttat  ttcattttttc  gcgcacggta  tgccctggac  caccgatctc  gatcattgag
4021  aactcggtgg  attttttcca  gaatcctata  gaggtgggat  tgaatgttta  gatacatggg
4081  cattaggccg  tctttggggt  ggagatagct  ccattgaagg  gattcatgct  ccggggtagt
4141  gttgtaaatc  acccagtcat  aacaaggtcg  cagtgcatgg  tgttgcacaa  tatctttttag
4201  aagtaggctg  attgccacag  ataagcccctt  ggtgtaggtg  tttacaaacc  ggttgagctg
4261  ggaggggtgc  attcgaggtg  aaattatgtg  cattttggat  tggatttttta  agttggcaat
4321  attgccgcca  agatcccgtc  ttgggttcat  gttatgaagg  actaccaaga  cggtgtatcc
4381  ggtacattta  ggaaatttat  cgtgcagctt  ggatggaaaa  gcgtggaaaa  atttggagac
4441  acccttgtgt  cctccgagat  tttccatgca  ctcatccatg  ataatagcaa  tggggccgtg
4501  ggcagcggcg  cgggcaaaca  cgttccgtgg  gtctgacaca  tcatagttat  gttcctgagt
4561  taaatcatca  taagccattt  taatgaattt  ggggcggagc  gtaccagatt  ggggtatgaa
4621  tgttccttcg  ggccccggag  catagttccc  ctcacagatt  tgcatttccc  aagctttcag
4681  ttctgagggt  ggaatcatgt  ccacctgggg  ggctatgaag  aacaccgttt  cggggggcggg
4741  ggtgattagt  tgggatgata  gcaagtttct  gagcaattga  gatttgccac  atccggtggg
4801  gccataaata  attccgatta  caggttgcag  gtggtagttt  agggaacggc  aactgccgtc
4861  ttctcgaagc  aaggggggcca  cctcgttcat  catttcccctt  acatgcatat  tttcccgcac
4921  caaatccatt  aggaggcgct  ctcctcctag  tgatagaagt  tcttgtagtg  aggaaaagtt
4981  tttcagcggt  tttagaccgt  cagccatggg  cattttggaa  agagtttgct  gcaaaagttc
5041  tagtctgttc  cacagttcag  tgatgtgttc  tatggcatct  cgatccagca  gacctcctcg
5101  tttcgcgggt  ttggacggct  cctggagtag  ggtatgagac  gatgggcgtc  cagcgctgcc
5161  agggttcggt  ccttccaggg  tctcagtgtt  cgagtcaggg  ttgtttccgt  cacagtgaag
5221  gggtgtgcgc  ctgcttgggc  gcttgccagg  gtgcgcttca  gactcattct  gctggtggag
5281  aacttctgtc  gcttggcgcc  ctgtatgtcg  gccaagtagc  agtttaccat  gagttcgtag
5341  ttgagcgcct  cggctgcgtg  gcctttggcg  cggagcttac  ctttggaagt  tttcttgcat
5401  accgggcagt  ataggcattt  cagcgcatac  agcttgggcg  caaggaaaat  ggattctggg
5461  gagtatgcat  ccgcgccgca  ggaggcgcaa  acagtttcac  attccaccag  ccaggttaaa
5521  tccggttcat  tggggtcaaa  aacaagtttt  ccgccatatt  ttttgatgcg  tttcttacct
5581  ttggtctcca  taagttcgtg  tcctcgttga  gtgacaaaca  ggctgtccgt  atctccgtag
5641  actgatttta  caggcctctt  ctccagtgga  gtgcctcggt  cttcttcgta  caggaactct
5701  gaccactctg  atacaaaggc  gcgcgtccag  gccagcacaa  aggaggctat  gtgggagggg
5761  tagcgatcgt  tgtcaaccag  ggggtccacc  ttttccaaag  tatgcaaaca  catgtcaccc
5821  tcttcaacat  ccaggaatgt  gattggcttg  taggtgtatt  tcacgtgacc  tggggtcccc
5881  gctggggggg  tataaaaggg  ggcggttctt  tgctcttcct  cactgtcttc  cggatcgctg
5941  tccaggaacg  tcagctgttg  gggtaggtat  tccctctcga  aggcgggcat  gacctctgca
6001  ctcaggttgt  cagtttctaa  gaacgaggag  gatttgatat  tgacagtgcc  ggttgagatg
6061  cctttcatga  ggttttcgtc  catttggtca  gaaaacacaa  ttttttttatt  gtcaagtttg
6121  gtggcaaatg  atccatacag  ggcgttggat  aaaagtttgg  caatggatcg  catggtttgg
6181  ttctttttcct  tgtccgcgcg  ctctttggcg  gcgatgttga  gttggacata  ctcgcgtgcc
6241  aggcacttcc  attcggggaa  gatagttgtt  aattcatctg  gcacgattct  cacttgccac
6301  cctcgattat  gcaaggtaat  taaatccaca  ctggtggcca  cctcgcctcg  aagggggttca
6361  ttggtccaac  agagcctacc  tcctttccta  gaacagaaag  ggggaagtgg  gtctagcata
6421  agttcatcgg  gagggtctgc  atccatggta  aagattcccg  gaagtaaatc  cttatcaaaa
6481  tagctgatgg  gagtgggggtc  atctaaggcc  atttgccatt  ctcgagctgc  cagtgcgcgc
6541  tcatatgggt  taaggggact  gccccagggc  atgggatggg  tgagagcaga  ggcatacatg
6601  ccacagatgt  catagacgta  gatgggatcc  tcaaagatgc  ctatgtaggt  tggatagcat
6661  cgcccccctc  tgatacctgc  tcgcacatag  tcatatagtt  catgtgatgg  cgctagcagc
6721  cccggaccca  agttggtgcg  attgggtttt  tctgttctgt  agacgatctg  gcgaaagatg
6781  gcgtgagaat  tggaagagat  ggtgggtctt  tgaaaaatgt  tgaaatgggc  atgaggtaga
6841  cctacagagt  ctctgacaaa  gtgggcataa  gattcttgaa  gcttggttac  cagttcggcg
6901  gtgacaagta  cgtctagggc  gcagtagtca  agtgtttctt  gaatgatgtc  ataacctggt
6961  tggttttttct  ttttcccacag  ttcgcggttg  agaaggtatt  cttcgcgatc  cttccagtac
7021  tcttctagcg  gaaacccgtc  tttgtctgca  cggtaagatc  ctagcatgta  gaactgatta
7081  actgccttgt  aagggcagca  gccccttctct  acgggtagag  agtatgcttg  agcagctttt
7141  cgtagcgaag  cgtgagtaag  ggcaaaggtg  tctctgacca  tgactttgag  aaattggtat
7201  ttgaagtcca  tgtcgtcaca  ggctccctgt  tcccagagtt  ggaagtctac  ccgttcttg
7261  taggcggggt  tgggcaaagc  gaaagtaaca  tcattgaaga  gaatcttacc  ggctctgggc
7321  ataaaattgc  gagtgatgcg  gaaaggctgt  ggtacttccg  ctcgattgtt  gatcacctgg
7381  gcagctagga  cgatttcgtc  gaaaccgttg  atgttgtgtc  ctacgatgta  taattctatg
7441  aaacgcggcg  tgcctctgac  gtgaggtagc  ttactgagct  catcaaaggt  taggtctgtg
7501  gggtcagata  aggcgtagtg  ttcgagagcc  cattcgtgca  ggtgaggatt  tgcatgtagg
```

FIG. 2A-2

```
 7561 aatgatgacc aaagatctac cgccagtgct gtttgtaact ggtcccgata ctgacgaaaa
 7621 tgccggccaa ttgccatttt ttctggagtg acacagtaga aggttctggg gtcttgttgc
 7681 catcgatccc acttgagttt aatggctaga.tcgtgggcca tgttgacgag acgctcttct
 7741 cctgagagtt tcatgaccag catgaaagga actagttgtt tgccaaagga tcccatccag
 7801 gtgtaagttt ccacatcgta ggtcaggaag agtctttctg tgcgaggatg agagccgatc
 7861 gggaagaact ggatttcctg ccaccagttg gaggattggc tgttgatgtg atggaagtag
 7921 aagtttctgc ggcgcgccga gcattcgtgt ttgtgcttgt acagacggcc gcagtagtcg
 7981 cagcgttgca cgggttgtat ctcgtgaatg agctgtacct ggcttccctt gacgagaaat
 8041 ttcagtggga agccgaggcc tggcgattgt atctcgtgct cttctatatt cgctgtatcg
 8101 gcctgttcat cttctgtttc gatggtggtc atgctgacga gccccgcgg gaggcaagtc
 8161 cagacctcgg cgcgggaggg gcggagctga aggacgagag cgcgcaggct ggagctgtcc
 8221 agagtcctga gacgctgcgg actcaggtta gtaggtaggg acagaagatt aacttgcatg
 8281 atcttttcca gggcgtgcgg gaggttcaga tggtacttga tttccacagg ttcgtttgta
 8341 gagacgtcaa tggcttgcag ggttccgtgt cctttgggcg ccactaccgt acctttgttt
 8401 tttcttttga tcggtggtgg ctctcttgct tcttgcatgc tcagaagcgg tgacggggac
 8461 gcgcgccggg cggcagcggt tgttccggac ccgggggcat ggctggtagt ggcacgtcgg
 8521 cgccgcgcac gggcaggttc tggtattgcg ctctgagaag acttgcgtgc gccaccacgc
 8581 gtcgattgac gtcttgtatc tgacgtctct gggtgaaagc taccggcccc gtgagcttga
 8641 acctgaaaga gagttcaaca gaatcaattt cggtatcgtt aacggcagct tgtctcagta
 8701 tttcttgtac gtcaccagag ttgtcctggt aggcgatctc cgccatgaac tgctcgattt
 8761 cttcctcctg aagatctccg cgacccgctc tttcgacggt ggccgcgagg tcattggaga
 8821 tacggcccat gagttgggag aatgcattca tgcccgcctc gttccagacg cggctgtaaa
 8881 ccacggcccc ctcggagtct cttgcgcgca tcaccacctg agcgaggtta agctccacgt
 8941 gtctggtgaa gaccgcatag ttgcataggc gctgaaaaag gtagttgagt gtggtggcaa
 9001 tgtgttcggc gacgaagaaa tacatgatcc atcgtctcag cggcatttcg ctaacatcgc
 9061 ccagagcttc caagcgctcc atggcctcgt agaagtccac ggcaaaatta aaaaactggg
 9121 agtttcgcgc ggacacggtc aattcctcct cgagaagacg gatgagttcg gctatggtgg
 9181 cccgtacttc gcgttcgaag gctcccggga tctcttcttc ctcttctatc tcttcttcca
 9241 ctaacatctc ttcttcgtct tcaggcgggg gcggagggg cacgcggcga cgtcgacggc
 9301 gcacgggcaa acggtcgatg aatcgttcaa tgacctctcc gcggcggcgg cgcatggttt
 9361 cagtgacggc gcggccgttc tcgcgcggtc gcagagtaaa aacaccgccg cgcatctcct
 9421 taaagtggtg actgggaggt tctccgtttg ggagggagag ggcgctgatt atacatttta
 9481 ttaattggcc cgtagggact gcgcgcagag atctgatcgt gtcaagatcc acgggatctg
 9541 aaaacctttc gacgaaagcg tctaaccagt cacagtcaca aggtaggctg agtacggctt
 9601 cttgtgggcg ggggtggtta tgtgttcggt ctgggtcttc tgtttcttct tcatctcggg
 9661 aaggtgagac gatgctgctg gtgatgaaat taaagtaggc agttctaaga cggcggatgg
 9721 tggcgaggag caccaggtct ttgggtccgg cttgctggat acgcaggcga ttggccattc
 9781 cccaagcatt atcctgacat ctagcaagat ctttgtagta gtcttgcatg agccgttcta
 9841 cgggcacttc ttcctcaccc gttctgccat gcatacgtgt gagtccaaat ccgcgcattg
 9901 gttgtaccag tgccaagtca gctacgactc tttcggcgag gatggcttgc tgtacttggg
 9961 taagggtggc ttgaaagtca tcaaaatcca caaagcggtg gtaagccct gtattaatgg
10021 tgtaagcaca gttggccatg actgaccagt taactgtctg gtgaccaggg cgcacgagct
10081 cggtgtattt aaggcgcgaa taggcgcggg tgtcaaagat gtaatcgttg caggtgcgca
10141 ccagatactg gtaccctata agaaaatgcg gcggtggttg gcggtagaga ggccatcgtt
10201 ctgtagctgg agcgccaggg gcgaggtctt ccaacataag gcggtgatag ccgtagatgt
10261 acctggacat ccaggtgatt cctgcggcgg tagtagaagc ccgaggaaac tcgcgtacgc
10321 ggttccaaat gttgcgtagc ggcatgaagt agttcattgt aggcacggtt tgaccagtga
10381 ggcgcgcgca gtcattgatg ctctatagac acggagaaaa tgaaagcgtt cagcgactcg
10441 actccgtagc ctggaggaac gtgaacgggt tgggtcgcgg tgtacccgcg ttcgagactt
10501 gtactcgagc cggccggagc cgcggctaac gtggtattgg cactcccgtc tcgacccagc
10561 ctacaaaaat ccaggatacg gaatcgagtc gttttgctgg tttccgaatg gcagggaagt
10621 gagtcctatt ttttttttt ttttgccgct cagatgcatc ccgtgctgcg acagatgcgc
10681 ccccaacaac agccccctc gcagcagcag cagcagcagc aaccacaaaa ggctgtccct
10741 gcaactactg caactgccgc cgtgagcggt gcgggacagc ccgcctatga tctggacttg
10801 gaagagggcg aaggactggc acgtctaggt gcgccttcgc ccgagcggca tccgcgagtt
10861 caactgaaaa aagattctcg cgaggcgtat gtgccccaac agaacctatt tagagacaga
10921 agcggcgagg agccggagga gatgcgagct tccgctttta acgcgggtcg tgagctgcgt
10981 cacggtttgg accgaagacg agtgttgcga gacgaggatt tcgaagttga tgaagtgaca
11041 gggatcagtc ctgccagggc acgtggct gcagccaacc ttgtatcggc ttacgagcag
11101 acagtaaagg aagagcgtaa cttccaaaag tcttttaata atcatgtgcg aaccctgatt
11161 gcccgcgaag aagttaccct tggtttgatg catttgtggg atttgatgga agctatcatt
11221 cagaaccta ctagcaaacc tctgaccgcc cagctgtttc tggtggtgca acacagcaga
11281 gacaatgagg ctttcagaga ggcgctgctg aacatcaccg aacccgaggg gagatggttg
```

FIG. 2A-3

```
11341 tatgatctta tcaacattct acagagtatc atagtgcagg agcggagcct gggcctggcc
11401 gagaaggtag ctgccatcaa ttactcggtt ttgagcttgg gaaaatatta cgctcgcaaa
11461 atctacaaga ctccatacgt tcccatagac aaggaggtga agatagatgg gttctacatg
11521 cgcatgacgc tcaaggtctt gaccctgagc gatgatcttg gggtgtatcg caatgacaga
11581 atgcatcgcg cggttagcgc cagcaggagg cgcgagttaa gcgacaggga actgatgcac
11641 agtttgcaaa gagctctgac tggagctgga accgagggtg agaattactt cgacatggga
11701 gctgacttgc agtggcagcc tagtcgcagg gctctgagcg ccgcgacggc aggatgtgag
11761 cttccttaca tagaagaggc ggatgaaggc gaggaggaag agggcgagta cttggaagac
11821 tgatggcaca acccgtgttt tttgctagat ggaacagcaa gcaccggatc ccgcaatgcg
11881 ggcggcgctg cagagccagc cgtccggcat taactcctcg gacgattgga cccaggccat
11941 gcaacgtatc atggcgttga cgactcgcaa ccccgaagcc tttagacagc aaccccaggc
12001 caaccgtcta tcggccatca tggaagctgt agtgccttcc cgatctaatc ccactcatga
12061 gaaggtcctg gccatcgtga acgcgttggt ggagaacaaa gctattcgtc cagatgaggc
12121 cggactggta tacaacgctc tcttagaacg cgtggctcgc tacaacagta gcaatgtgca
12181 aaccaatttg gaccgtatga taacagatgt acgcgaagcc gtgtctcagc gcgaaaggtt
12241 ccagcgtgat gccaacctgg gttcgctggt ggcgttaaat gctttcttga gtactcagcc
12301 tgctaatgtg ccgcgtggtc aacaggatta tactaacttt ttaagtgctt tgagactgat
12361 ggtatcagaa gtacctcaga gcgaagtgta tcagtccggt cctgattact tctttcagac
12421 tagcagacag ggcttgcaga cggtaaatct gagccaagct tttaaaaacc ttaaaggttt
12481 gtggggagtg catgccccgg taggagaaag agcaaccgtg tctagcttgt taactccgaa
12541 ctccccgcctg ttattactgt tggtagctcc tttcaccgac agcggtagca tcgaccgtaa
12601 ttcctatttg ggttacctac taaacctgta tcgcgaagcc atagggcaaa gtcaggtgga
12661 cgagcagacc tatcaagaaa ttacccaagt cagtcgcgct ttgggacagg aagacactgg
12721 cagtttggaa gccactctga acttcttgct taccaatcgg tctcaaaaga tccctcctca
12781 atatgctctt actgcggagg aggagaggat ccttagatat gtgcagcaga gcgtgggatt
12841 gtttctgatg caagaggggg caactccgac tgcagcactg gacatgacag cgcgaaatat
12901 ggagcccagc atgtatgcca gtaaccgacc tttcattaac aaactgctgg actacttgca
12961 cagagctgcc gctatgaact ctgattattt caccaatgcc atcttaaacc cgcactggct
13021 gcccccacct ggtttctaca cgggcgaata tgacatgccc gaccctaatg acggatttct
13081 gtgggacgac gtggacagcg atgttttttc acctctttct gatcatcgca cgtggaaaaa
13141 ggaaggcggt gatagaatgc attcttctgc atcgctgtcc ggggtcatgg gtgctaccgc
13201 ggctgagccc gagtctgcaa gtccttttcc tagtctaccc ttttctctac acagtgtacg
13261 tagcagcgaa gtgggtagaa taagtcgccc gagtttaatg ggcgaagagg agtacctaaa
13321 cgattccttg ctcagaccgg caagagaaaa aaatttccca acaatggaa tagaaagttt
13381 ggtggataaa atgagtagat ggaagactta tgctcaggat cacagagacg agcctgggat
13441 catggggact acaagtagag cgagccgtag acgccagacc catgacagac agaggggtct
13501 tgtgtgggac gatgaggatt cggccgatga tagcagcgtg ttggacttgg gtggagagg
13561 aagggcaac ccgtttgctc atttgcgccc tcgcttgggt ggtatgttgt gaaaaaaaat
13621 aaaaaagaaa aactcaccaa ggccatggcg acgagcgtac gttcgttctt ctttattatc
13681 tgtgtctagt ataatgaggc gagtcgtgct aggcggagcg gtggtgtatc cggagggtcc
13741 tcctccttcg tacgagagcg tgatgcagca gcagcaggcg acggcggtga tgcaatcccc
13801 actggaggct ccctttgtgc ctccgcgata cctggcacct acggagggga gaaacagcat
13861 tcgttactcg gaactggcac ctcagtacga taccaccagg ttgtatctgg tggacaacaa
13921 gtcggcggac attgcttctc tgaactatca gaatgaccac agcaacttct tgaccacggt
13981 ggtgcagaac aatgacttta cccctacgga agccagcacc cagaccatta ctttgatga
14041 acgatcgcgg tggggcggtc agctaaagac catcatgcat actaacatgc caaacgtgaa
14101 cgagtatatg tttagtaaca agttcaaagc gcgtgtgatg gtgtccagaa aacctcccga
14161 cggtgctgca gttggggata cttatgatca caagcaggat attttggaat atgagtggtt
14221 cgagtttact ttgccagaag gcaacttttc agttactatg actattgatt tgatgaacaa
14281 tgccatcata gataattact tgaaagtggg tagacagaat ggagtgcttg aaagtgacat
14341 tggtgttaag ttcgacacca ggaacttcaa gctgggatgg gatcccgaaa ccaagttgat
14401 catgcctgga gtgtatacgt atgaagcctt ccatcctgac attgtcttac tgcctggctg
14461 cggagtggat tttaccgaga gtcgtttgag caaccttctt ggtatcagaa aaaaacagcc
14521 atttcaagag ggttttaaga ttttgtatga agatttagaa ggtggtaata ttccggccct
14581 cttggatgta gatgcctatg agaacagtaa gaaagaacaa aaagccaaaa tagaagctgc
14641 tacagctgct gcagaagcta aggcaaacat agttgccagc gactctacaa gggttgctaa
14701 cgctggagag gtcagaggag acaattttgc gccaacacct gttccgactg cagaatcatt
14761 attggccgat gtgtctgatg aacggacgt gaaactcact attcaacctg tagaaaaaga
14821 tagtaagaat agaagctata atgtgttgga agacaaaatc aacacagcct atcgcagttg
14881 gtatctttcg tacaattatg gcgatcccga aaaaggagtg cgttcctgga cattgctcac
14941 cacctcagat gtcacctgcg gagcagagca ggtttactgg tcgcttccag acatgatgaa
15001 ggatcctgtc actttccgct ccactagaca agtcagtaac taccctgtgg tgggtgcaga
15061 gcttatgccc gtcttctcaa agagcttcta caacgaacaa gctgtgtact cccagcagct
```

FIG. 2A-4

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15121 ccgccagtcc acctcgctta cgcacgtctt caaccgcttt cctgagaacc agattttaat
15181 ccgtccgccg gcgcccacca ttaccaccgt cagtgaaaac gttcctgctc tcacagatca
15241 cgggaccctg ccgttgcgca gcagtatccg gggagtccaa cgtgtgaccg ttactgacgc
15301 cagacgccgc acctgtccct acgtgtacaa ggcactgggc atagtcgcac cgcgcgtcct
15361 ttcaagccgc actttctaaa aaaaaaatgt ccattcttat ctcgcccagt aataacaccg
15421 gttggggtct gcgcgctcca agcaagatgt acggaggcgc acgcaaacgt tctacccaac
15481 atcccgtgcg tgttcgcgga cattttcgcg ctccatgggg tgccctcaag ggccgcactc
15541 gcgttcgaac caccgtcgat gatgtaatcg atcaggtggt tgccgacgcc cgtaattata
15601 ctcctactgc gcctacatct actgtggatg cagttattga cagtgtagtg gctgacgctc
15661 gcaactatgc tcgacgtaag agccggcgaa ggcgcattgc cagacgccac cgagctacca
15721 ctgccatgcg agccgcaaga gctctgctac gaagagctag acgcgtgggg cgaagagcca
15781 tgcttagggc ggccagacgt gcagcttcgg gcgccagcgc cggcaggtcc cgcaggcaag
15841 cagccgctgt cgcagcggcg actattgccg acatggccca atcgcgaaga ggcaatgtat
15901 actgggtgcg tgacgctgcc accggtcaac gtgtacccgt gcgcacccgt ccccctcgca
15961 cttagaagat actgagcagt ctccgatgtt gtgtcccagc ggcgaggatg tccaagcgca
16021 aatacaagga agaaatgctg caggttatcg cacctgaagt ctacgaccaa ccgttgaagg
16081 atgaaaaaaa accccgcaaa atcaagcggg ttaaaaagga caaaaaagaa gaggaagatg
16141 gcgatgatgg gctggcggag tttgtgcgcg agtttgcccc acggcgacgc gtgcaatggc
16201 gtgggcgcaa agttcgacat gtgttgagac ctggaacttc ggtggtcttt acacccggcg
16261 agcgttcaag cgctactttt aagcgttcct atgatgaggt gtacggggat gatgatattc
16321 ttgagcaggc ggctgaccga ttaggcgagt ttgcttatgg caagcgtagt agaataactt
16381 ccaaggatga gacagtgtca atacccttgg atcatggaaa tcccacccct agtcttaaac
16441 cggtcacttt gcagcaagtg ttacccgtaa ctccgcgaac aggtgttaaa cgcgaaggtg
16501 aagatttgta tcccactatg caactgatgg tacccaaacg ccagaagttg gaggacgttt
16561 tggagaaagt aaaagtggat ccagatattc aacctgaggt taaagtgaga cccattaagc
16621 aggtagcgcc tggtctgggg gtacaaactg tagacattaa gattcccact gaaagtatgg
16681 aagtgcaaac tgaacccgca aagcctactg ccacctccac tgaagtgcaa acggatccat
16741 ggatgcccat gcctattaca actgacgccg ccggtcccac tcgaagatcc cgacgaaagt
16801 acggtccagc aagtcgttg atgcccaatt atgttgtaca cccatctatt attcctactc
16861 ctggttaccg aggcactcgc tactatcgca gccgaaacag tacctcccgc cgtcgccgca
16921 agacacctgc aaatcgcagt cgtcgccgta gacgcacaag caaaccgact cccggcgccc
16981 tggtgcggca agtgtaccgc aatggtagtg cggaaccttt gacactgccg cgtgcgcgtt
17041 accatccgag tatcatcact taatcaatgt tgccgctgcc tccttgcaga tatggccctc
17101 acttgtcgcc ttcgcgttcc catcactggt taccgaggaa gaaactcgcg ccgtagaaga
17161 gggatgttgg gacgcggaat gcgacgctac aggcgacggc gtgctatccg caagcaattg
17221 cggggtggtt ttttaccagc cttaattcca attatcgctg ctgcaattgg cgcgatacca
17281 ggcatagctt ccgtggcgt tcaggcctcg caacgacatt gacattggaa aaaaaacgta
17341 taaataaaaa aaaatacaat ggactctgac actcctggtc ctgtgactat gttttcttag
17401 agatggaaga catcaatttt tcatccttgg ctccgcgaca cggcacgaag ccgtacatgg
17461 gcacctggag cgacatcggc acgagccaac tgaacggggg cgccttcaat tggagcagta
17521 tctggagcgg gcttaaaaat tttggctcaa ccataaaaac atacgggaac aaagcttgga
17581 acagcagtac aggacaggcg cttagaaata aacttaaaga ccagaacttc caacaaaaag
17641 tagtcgatgg gatagcttcc ggcatcaatg gagtggtaga tttggctaac caggctgtgc
17701 agaaaaagat aaacagtcgt ttggacccgc cgccagcaac cccaggtgaa atgcaagtgg
17761 aggaagaaat tcctccgcca gaaaaacgag gcgacaagcg tccgcgtccc gatttggaag
17821 agacgctggt gacgcgcgta gatgaaccgc cttcttatga ggaagcaacg aagcttggaa
17881 tgcccaccac tagaccgata gccccaatgg ccaccggggt gatgaaacct tctcagttgc
17941 atcgacccgt caccttggat ttgccccctc ccctgctgc tactgctgta cccgcttcta
18001 agcctgtcgc tgccccgaaa ccagtcgccg tagccaggtc acgtcccggg ggcgctcctc
18061 gtccaaatgc gcactggcaa aatactctga acagcatcgt gggtctaggc gtgcaaagtg
18121 taaaacgccg tcgctgcttt taattaaata tggagtagcg cttaacttgc ctatctgtgt
18181 atatgtgtca ttacacgccg tcacagcacg agaggaaaaa aggaagaggt cgtgcgtcga
18241 cgctgagtta ctttcaagat ggccaccca tcgatgctgc cccaatgggc atacatgcac
18301 atcgccggac aggatgcttc ggagtacctg agtccgggtc tggtgcagtt cgcccgcgcc
18361 acagacacct acttcaatct gggaaataag tttagaaatc ccaccgtagc gccgacccac
18421 gatgtgacca ccgaccgtag ccagcggctc atgttgcgct tcgtgcccgt tgaccgggag
18481 gacaatacat actcttacaa agtgcggtac accctggccg tgggcgacaa cagagtgctg
18541 gatatggcca gcacgttctt tgacattagg ggcgtgttgg acagaggtcc cagtttcaaa
18601 ccctattctg gtacggttca caactctctg gctcctaaag cgctccaaa tgcatctcaa
18661 tggattgcaa aaggcgtacc aactgcagca gccgcaggca atggtgaaga agaacatgaa
18721 acagaggaga aaactgctac ttacactttt gccaatgctc ctgtaaaagc cgaggctcaa
18781 attacaaaag agggcttacc aataggtttg gagatttcag ctgaaaacga atctaaaccc
18841 atctatgcag ataaacttta tcagccagaa cctcaagtgg gagatgaaac ttggactgac
```

FIG. 2A-5

```
18901  ctagacggaa  aaaccgaaga  gtatggaggc  agggctctaa  agcctactac  taacatgaaa
18961  ccctgttacg  ggtcctatgc  gaagcctact  aatttaaaag  gtggtcaggc  aaaaccgaaa
19021  aactcggaac  cgtcgagtga  aaaaattgaa  tatgatattg  acatggaatt  ttttgataac
19081  tcatcgcaaa  gaacaaactt  cagtcctaaa  attgtcatgt  atgcagaaaa  tgtaggtttg
19141  gaaacgccag  acactcagtt  agtgtacaaa  cctggaacag  aagacacaag  ttccgaagct
19201  aatttgggac  aacagtctat  gcccaacaga  cccaactaca  ttggcttcag  agataacttt
19261  attggactca  tgtactataa  cagtactggt  aacatggggg  tgctggctgg  tcaagcgtct
19321  cagttaaatg  cagtggttga  cttgcaggac  agaaacacag  aactttctta  ccaactcttg
19381  cttgactctc  tgggcgacag  aaccagatac  tttagcatgt  ggaatcaggc  tgtggacagt
19441  tatgatcctg  atgtacgtgt  tattgaaaat  catggtgtgg  aagatgaact  tcccaactat
19501  tgttttccac  tggacggcat  aggtgttcca  acaaccagtt  acaaatcaat  agttccaaat
19561  ggagaagata  ataataattg  gaaagaacct  gaagtaaatg  gaacaagtga  gatcggacag
19621  ggtaatttgt  ttgccatgga  aattaacctt  caagccaatc  tatggcgaag  tttcctttat
19681  tccaatgtgg  ctctgtatct  cccagactcg  tacaaataca  ccccgtccaa  tgtcactctt
19741  ccagaaaaca  aaaacaccta  cgactacatg  aacgggcggg  tggtgccgcc  atctctagta
19801  gacacctatg  tgaacattgg  tgccaggtgg  tctctggatg  ccatggacaa  tgtcaaccca
19861  ttcaaccacc  accgtaacgc  tggcttgcgt  taccgatcta  tgcttctggg  taacggacgt
19921  tatgtgcctt  tccacataca  agtgcctcaa  aaattcttcg  ctgttaaaaa  cctgctgctt
19981  ctcccaggct  cctacactta  tgagtggaac  tttaggaagg  atgtgaacat  ggttctacag
20041  agttccctcg  gtaacgacct  gcgggtagat  ggcgccagca  tcagtttcac  gagcatcaac
20101  ctctatgcta  cttttttccc  catggctcac  aacaccgctt  ccaccctcga  agccatgctg
20161  cggaatgaca  ccaatgatca  gtcattcaac  gactacctat  ctgcagctaa  catgctctac
20221  cccattcctg  ccaatgcaac  caatattccc  atttccattc  cttctcgcaa  ctgggcggct
20281  ttcagaggct  ggtcatttac  cagactgaaa  accaaagaaa  ctccctcttt  ggggtctgga
20341  tttgacccct  actttgtcta  ttctggttct  attccctacc  tggatggtac  cttctacctg
20401  aaccacactt  ttaagaaggt  ttccatcatg  tttgactctt  cagtgagctg  gcctggaaat
20461  gacaggttac  tatctcctaa  cgaatttgaa  ataaagcgca  ctgtggatgg  cgaaggctac
20521  aacgtagccc  aatgcaacat  gaccaaaagc  tggttcttgg  tacagatgct  cgccaactac
20581  aacatcggct  atcagggctt  ctacattcca  gaaggataca  aagatcgcat  gtattcattt
20641  ttcagaaact  tccagcccat  gagcaggcag  gtggttgatg  aggtcaatta  caaagacttc
20701  aaggccgtcg  ccatacccta  ccaacacaac  aactctggct  ttgtgggtta  catggctccg
20761  accatgcgcc  aaggtcaacc  ctatcccgct  aactatcct  atccactcat  tggaacaact
20821  gccgtaaata  gtgttacgca  gaaaaagttc  ttgtgtgaca  gaaccatgtg  cgcataccg
20881  ttctcgagca  acttcatgtc  tatggggggcc  cttacagact  gggacagaa  tatgctctat
20941  gccaactcag  ctcatgctct  ggacatgacc  tttgaggtgg  atcccatgga  tgagcccacc
21001  ctgctttatc  ttctcttcga  agttttcgac  gtggtcagag  tgcatcagcc  acaccgcggc
21061  atcatcgagg  cagtctacct  gcgtacaccg  ttctcggccg  gtaacgctac  cacgtaagaa
21121  gcttcttgct  tcttgcaaat  agcagctgca  accatggcct  gcggatccca  aaacggctcc
21181  agcgagcaag  agctcagagc  cattgtccaa  gacctgggtt  gcggacccta  tttttttggga
21241  acctacgata  agcgcttccc  ggggttcatg  gccccgata  agctcgcctg  tgccattgta
21301  aatacggccg  gacgtgagac  gggggggagag  cactggttgg  ctttcggttg  gaacccacgt
21361  tctaacacct  gctacctttt  tgatcctttt  ggattctcgg  atgatcgtct  caaacagatt
21421  taccagtttg  aatatgaggg  tctcctgcgc  cgcagcgctc  ttgctaccaa  ggaccgctgt
21481  attacgctgg  aaaaatctac  ccagaccgtg  cagggccccc  gttctgccgc  ctgcggactt
21541  ttctgctgca  tgttccttca  cgcctttgtg  cactgcctg  accgtcccat  ggacggaaac
21601  cccaccatga  aattgctaac  tggagtgcca  aacaacatgc  ttcattctcc  taaagtccag
21661  cccaccctgt  gtgacaatca  aaaagcactc  taccattttc  ttaatacca  ttcgccttat
21721  tttcgctctc  atcgtacaca  catcgaaagg  gccactgcgt  tcgaccgtat  ggatgttcaa
21781  taatgactca  tgtaaacaac  gtgttcaata  aacatcactt  tattttttta  catgtatcaa
21841  ggctctggat  tacttatta  tttacaagtc  gaatgggttc  tgacgagaat  cagaatgacc
21901  cgcaggcagt  gatacgttgc  ggaactgata  cttgggttgc  cacttgaatt  cgggaatcac
21961  caacttggga  accggtatat  cgggcaggat  gtcactccac  agctttctgg  tcagctgcaa
22021  agctccaagc  aggtcaggag  ccgaaatctt  gaaatcacaa  ttaggaccag  tgctctgagc
22081  gcgagagttg  cggtacaccg  gattgcagca  ctgaaacacc  atcagcgacg  gatgtctcac
22141  gcttgccagc  acggtgggat  ctgcaatcat  gcccacatcc  agatcttcag  cattggcaat
22201  gctgaacggg  gtcatcttgc  aggtctgcct  acccatggcg  ggcacccaat  taggcttgtg
22261  gttgcaatcg  cagtgcaggg  ggatcagtat  catcttggcc  tgatcctgtc  tgattcctgg
22321  atacacggct  ctcatgaaag  catcatattg  cttgaaagcc  tgctgggctt  tactaccctc
22381  ggtataaaac  atcccgcagg  acctgctcga  aaactggtta  gctgcacagc  cggcatcatt
22441  cacacagcag  cgggcgtcat  tgttggctat  ttgcaccaca  cttctgcccc  agcggttttg
22501  ggtgattttg  gttcgctcgg  gattctcctt  taaggctcgt  tgtccgttct  cgctggccac
22561  atccatctcg  ataatctgct  ccttctgaat  cataatattg  ccatgcaggc  acttcagctt
22621  gccctcataa  tcattgcagc  catgaggcca  caacgcacag  cctgtacatt  cccaattatg
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FIG. 2A-6

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22681 gtgggcgatc tgagaaaaag aatgtatcat tccctgcaga aatcttccca tcatcgtgct
22741 cagtgtcttg tgactagtga aagttaactg gatgcctcgg tgctcttcgt ttacgtactg
22801 gtgacagatg cgcttgtatt gttcgtgttg ctcaggcatt agtttaaaac aggttctaag
22861 ttcgttatcc agcctgtact tctccatcag cagacacatc acttccatgc ctttctccca
22921 agcagacacc aggggcaagc taatcggatt cttaacagtg caggcagcag ctcctttagc
22981 cagagggtca tctttagcga tcttctcaat gcttcttttg ccatccttct caacgatgcg
23041 cacgggcggg tagctgaaac ccactgctac aagttgcgcc tcttctcttt cttcttcgct
23101 gtcttgactg atgtcttgca tggggatatg tttggtcttc cttggcttct ttttggggggg
23161 tatcggagga ggaggactgt cgctccgttc cggagacagg gaggattgtg acgtttcgct
23221 caccattacc aactgactgt cggtagaaga acctgacccc acacggcgac aggtgttttt
23281 cttcgggggc agaggtggag gcgattgcga agggctgcgg tccgacctgg aaggcggatg
23341 actggcagaa ccccttccgc gttcgggggt gtgctccctg tggcggtcgc ttaactgatt
23401 tccttcgcgg ctggccattg tgttctccta ggcagagaaa caacagacat ggaaactcag
23461 ccattgctgt caacatcgcc acgagtgcca tcacatctcg tcctcagcga cgaggaaaag
23521 gagcagagct taagcattcc accgcccagt cctgccacca cctctaccct agaagataag
23581 gaggtcgacg catctcatga catgcagaat aaaaaagcga aagagtctga gacagacatc
23641 gagcaagacc cgggctatgt gacaccggtg gaacacgagg aagagttgaa acgctttcta
23701 gagagagagg atgaaaactg cccaaaacag cgagcagata actatcacca agatgctgga
23761 aataggggatc agaacaccga ctacctcata gggcttgacg gggaagacgc gctccttaaa
23821 catctagcaa gacagtcgct catagtcaag gatgcattat tggacagaac tgaagtgccc
23881 atcagtgtgg aagagctcag ctgcgcctac gagcttaacc tttttcacc tcgtactccc
23941 cccaaacgtc agccaaacgg cacctgcgag ccaaatcctc gcttaaactt ttatccagct
24001 tttgctgtgc cagaagtact ggctacctat cacatctttt ttaaaaatca aaaaattcca
24061 gtctcctgcc gcgctaatcg cacccgcgcc gatgccctac tcaatctggg acctggttca
24121 cgcttacctg atatagcttc cttggaagag gttccaaaga tcttcgaggg tctgggcaat
24181 aatgagactc gggccgcaaa tgctctgcaa aagggagaaa atggcatgga tgagcatcac
24241 agcgttctgg tggaattgga aggcgataat gccagactcg cagtactcaa gcgaagcgtc
24301 gaggtcacac acttcgcata tcccgctgtc aacctgcccc ctaaagtcat gacggcggtc
24361 atggaccagt tactcattaa gcgcgcaagt ccccttttcag aagacatgca tgacccagat
24421 gcctgtgatg agggtaaacc agtggtcagt gatgagcagc taacccgatg gctgggcacc
24481 gactctcccc gggatttgga agagcgtcgc aagcttatga tggccgtggt gctggttacc
24541 gtagaactag agtgtctccg acgtttcttt accgattcag aaaccttgcg caaactcgaa
24601 gagaatctgc actacacttt tagacacggc tttgtgcggc aggcatgcaa gatatctaac
24661 gtggaactca ccaacctggt ttcctacatg ggtattctgc atgagaatcg cctaggacaa
24721 agcgtgctgc acagcaccct taaggggggaa gcccgcccgtg attacaccg cgattgtgtc
24781 tatctctacc tgtgccacac gtggcaaacc ggcatgggtg tatggcagca atgtttagaa
24841 gaacagaact tgaaagagct tgacaagctc ttacagaaat ctcttaaggt tctgtggaca
24901 gggttcgacg agcgcaccgt cgcttccgac ctggcagacc tcatcttccc agagcgtctc
24961 agggttactt tgcgaaacgg attgcctgac tttatgagcc agagcatgct aacaattttt
25021 cgctctttca tcctggaacg ctccggtatc ctgcccgcca cctgctgcgc actgccctcc
25081 gactttgtgc ctctcaccta ccgcgagtgc cccccgccgc tatggagtca ctgctacctg
25141 ttccgtctgg ccaactatct ctcctaccac tcggatgtga tcgaggatgt gagcggagac
25201 ggcttgctgg agtgccactg ccgctgcaat ctgtgcacgc cccaccggtc cctagcttgc
25261 aaccccagt tgatgagcga aacccagata ataggcacct ttgaattgca aggccccagc
25321 agccaaggcg atgggtcttc tcctgggcaa agtttaaaac tgaccccggg actgtggacc
25381 tccgcctact tgcgcaagtt tgctccggaa gattaccacc cctatgaaat caagttctat
25441 gaggaccaat cacagcctcc aaaggccgaa ctttcggctt gcgtcatcac ccaggggggca
25501 attctggccc aattgcaagc catccaaaaa tcccgccaag aatttctact gaaaaagggt
25561 aagggttct accttgaccc ccagaccggc gaggaactca acacaaggtt ccctcaggat
25621 gtcccaacga cgagaaaaca agaagttgaa ggtgcagccg ccgcccccag aagatatgga
25681 ggaagattgg gacagtcagg cagaggaggc ggaggaggac agtctggagg acagtctgga
25741 ggaagacagt ttggaggagg aaaacgagga ggcagaggag gtggaagaag taaccgccga
25801 caaacagtta tcctcggctg cggagacaag aacagcgct accatctccg ctccgagtcg
25861 aggaacccgg cggcgtccca gcagtagatg ggacgagacc ggacgcttcc cgaacccaac
25921 cagcgcttcc aagaccggta agaaggatcg gcaggatac aagtcctggc gggggcataa
25981 gaatgccatc atctcctgct tgcatgagtg cgggggcaac atatccttca cgcggcgcta
26041 cttgctattc caccatgggg tgaactttcc gcgcaatgtt ttgcattact accgtcacct
26101 ccacagcccc tactatagcc agcaaatccc gacagtctcg acagataaag acagcggcgg
26161 cgacctccaa cagaaaacca gcagcggcag ttagaaaata cacaacaagt gcagcaacag
26221 gaggattaaa gattacagcc aacgagccag cgcaaacccg agagttaaga aatcggatct
26281 ttccaaccct gtatgccatc ttccagcaga tcgggggtca agagcaggaa ctgaaaataa
26341 aaaaccgatc tctgcgttcg ctcaccagaa gttgtttgta tcacaagagc gaagatcaac
26401 ttcagcgcac tctcgaggac gccgaggctc tcttcaacaa gtactgcgcg ctgactctta
```

FIG. 2A-7

```
26461  aagagtaggc  agcgaccgcg  cttattcaaa  aaaggcggga  attacatcat  cctcgacatg
26521  agtaaagaaa  ttcccacgcc  ttacatgtgg  agttatcaac  cccaaatggg  attggcagca
26581  ggcgcctccc  aggactactc  cacccgcatg  aattggctca  gcgccgggcc  ttctatgatt
26641  tctcgagtta  atgatatacg  cgcctaccga  aaccaaatac  ttttggaaca  gtcagctctt
26701  accaccacgc  cccgccaaca  ccttaatccc  agaaattggc  ccgccgccct  agtgtaccag
26761  gaaagtcccg  ctcccaccac  tgtattactt  cctcgagacg  cccaggccga  agtccaaatg
26821  actaatgcag  gtgcgcagtt  agctggcggc  tccaccctat  gtcgtcacag  gcctcggcat
26881  aatataaaac  gcctgatgat  cagaggccga  ggtatccagc  tcaacgacga  gtcggtgagc
26941  tctccgcttg  gtctacgacc  agacggaatc  tttcagattg  ccggctgcgg  gagatcttcc
27001  ttcacccctc  gtcaggctgt  tctgactttg  gaaagttcgt  cttcgcaacc  ccgctcgggc
27061  ggaatcggga  ccgttcaatt  tgtagaggag  tttactccct  ctgtctactt  caaccccttc
27121  tccggatctc  ctgggcacta  cccggacgag  ttcataccga  acttcgacgc  gattagcgag
27181  tcagtggacg  gctacgattg  atgtctggtg  acgcggctga  gctatctcgg  ctgcgacatc
27241  tagaccactg  ccgccgcttt  cgctgctttg  cccgggaact  tattgagttc  atctacttcg
27301  aactccccaa  ggatcaccct  caaggtccgg  cccacggagt  gcggattact  atcgaaggca
27361  aaatagactc  tcgcctgcaa  cgaattttct  cccagcggcc  cgtgctgatc  gagcgagacc
27421  agggaaacac  cacggtttcc  atctactgca  tttgtaatca  ccccggattg  catgaaagcc
27481  tttgctgtct  tatgtgtact  gagtttaata  aaaactgaat  taagactctc  ctacggactg
27541  ccgcttcttc  aacccggatt  ttacaaccag  aagaacaaaa  cttttcctgt  cgtccaggac
27601  tctgttaact  tcacctttcc  tactcacaaa  ctagaagctc  aacgactaca  ccgcttttcc
27661  agaagcattt  tccctactaa  tactactttc  aaaaccggag  gtgagctcca  cggtctccct
27721  acagaaaacc  cttgggtgga  agcgggcctt  gtagtactag  gaattcttgc  gggtgggctt
27781  gtgattattc  tttgctacct  atacacacct  tgcttcactt  tcctagtggt  gttgtggtat
27841  tggtttaaaa  aatggggccc  atactagtct  tgcttgtttt  actttcgctt  ttggaaccgg
27901  gttctgccaa  ttacgatcca  tgtctagact  ttgacccaga  aaactgcaca  cttacttttg
27961  cacccgacac  aagccgcatc  tgtggagttc  ttattaagtg  cggatgggaa  tgcaggtccg
28021  ttgaaattac  acacaataac  aaaacctgga  acaataccct  atccaccaca  tgggagccag
28081  gagttcccga  gtggtacact  gtctctgtcc  gaggtcctga  cggttccatc  cgcattagta
28141  acaacacttt  cattttttct  gaaatgtgcg  atctggccat  gttcatgagc  aaacagtatt
28201  ctctatggcc  tcctagcaag  gacaacatcg  taacgttctc  cattgcttat  tgcttgtgcg
28261  cttgccttct  tactgcttta  ctgtgcgtat  gcatacacct  gcttgtaacc  actcgcatca
28321  aaaacgccaa  taacaaagaa  aaaatgcctt  aacctctttc  tgtttacaga  catggcttct
28381  cttacatctc  tcatatttgt  cagcattgtc  actgccgctc  acggacaaac  agtcgtctct
28441  atcccactag  gacataatta  cactctcata  ggacccccaa  tcacttcaga  ggtcatctgg
28501  accaaactgg  gaagcgttga  ttactttgat  ataatctgta  acaaaacaaa  accaataata
28561  gtaacttgca  acatacaaaa  tcttacattg  attaatgtta  gcaaagttta  cagcggttac
28621  tattatggtt  atgacagata  cagtagtcaa  tatagaaatt  acttggttcg  tgttacccag
28681  ttgaaaacca  cgaaaatgcc  aaatatggca  aagattcgat  ccgatgacaa  ttctctagaa
28741  acttttacat  ctcccaccac  acccgacgaa  aaaaacatcc  cagattcaat  gattgcaatt
28801  gttgcagcgg  tggcagtggt  gatggcacta  ataataatat  gcatgctttt  atatgcttgt
28861  cgctacaaaa  agtttcatcc  taaaaaacaa  gatctcctac  taaggcttaa  catttaattt
28921  cttttttatac  agccatggtt  tccactacca  cattccttat  gcttactagt  ctcgcaactc
28981  tgacttctgc  tcgctcacac  ctcactgtaa  ctataggctc  aaactgcaca  ctaaaaggac
29041  ctcaaggtgg  tcatgtcttt  tggtggagaa  tatatgacaa  tggatggttt  acaaaaccat
29101  gtgaccaacc  tggtagattt  ttctgcaacg  gcagagacct  aaccattatc  aacgtgacag
29161  caaatgacaa  aggcttctat  tatggaaccg  actataaaag  tagtttagat  tataacatta
29221  ttgtactgcc  atctaccact  ccagcacccc  gcacaactac  tttctctagc  agcagtgtcg
29281  ctaacaatac  aatttccaat  ccaacctttg  ccgcgctttt  aaaacgcctt  gtgaataatt
29341  ctacaacttc  acatacaaca  atttccactt  caacaatcag  catcatcgct  gcagtgacaa
29401  ttggaatatc  tattcttgtt  tttaccataa  cctactacgc  ctgctgctat  agaaaagaca
29461  aacataaagg  tgatccatta  cttagatttg  atatttaatt  tgttcttttt  ttttattttac
29521  agtatggtga  acaccaatca  tggtacctag  aaatttcttc  ttcaccatac  tcatctgtgc
29581  ttttaatgtt  tgcgctactt  tcacagcagt  agccacagca  accccagact  gtataggagc
29641  atttgcttcc  tatgcacttt  ttgcttttgt  tacttgcatc  tgcgtatgta  gcatagtctg
29701  cctggttatt  aatttttttcc  aacttctaga  ctggatcctt  gtgcgaattg  cctacctgcg
29761  ccaccatccc  gaataccgca  accaaaatat  cgcggcactt  cttagactca  tctaaaacca
29821  tgcaggctat  actaccaata  tttttgcttc  tattgcttcc  ctacgctgtc  tcaaccccag
29881  ctgcctatag  tactccacca  gaacacctta  gaaaatgcaa  attccaacaa  ccgtggtcat
29941  ttcttgcttg  ctatcgagaa  aaatcagaaa  tccccccaaa  tttaataatg  attgctggaa
30001  taattaatat  aatctgttgc  accataattt  catttttgat  ataccccta   tttgatttttg
30061  gctggaatgc  tcccaatgca  catgatcatc  cacaagaccc  agaggaacac  attcccccac
30121  aaaacatgca  acatccaata  gcgctaatag  attacgaaag  tgaaccacaa  ccccactac
30181  tccctgctat  tagttacttc  aacctaaccg  gcggagatga  ctgaaacact  caccacctcc
```

FIG. 2A-8

```
30241 aattccgccg aggatctgct cgatatggac ggccgcgtct cagaacaacg acttgcccaa
30301 ctacgcatcc gccagcagca ggaacgcgtg gccaaagagc tcagagatgt catccaaatt
30361 caccaatgca aaaaaggcat attctgtttg gtaaaacaag ccaagatatc ctacgagatc
30421 accgctactg accatcgcct ctcttacgaa cttggccccc aacgacaaaa atttacctgc
30481 atggtgggaa tcaaccccat agttatcacc caacaaagtg gagatactaa gggttgcatt
30541 cactgctcct gcgattccat cgagtgcacc tacaccctgc tgaagaccct atgcggccta
30601 agagacctgc taccaatgaa ttaaaaaaaa atgattaata aaaaatcact tacttgaaat
30661 cagcaataag gtctctgttg aaattttctc ccagcagcac ctcacttccc tcttcccaac
30721 tctggtattc taaaccccgt tcagcggcat actttctcca tactttaaag gggatgtcaa
30781 attttagctc ctctcctgta cccacaatct tcatgtcttt cttcccagat gaccaagaga
30841 gtccggctca gtgactcctt caaccctgtc taccctatg aagatgaaag cacctcccaa
30901 cacccctta taaacccagg gtttatttcc ccaaatggct tcacacaaag cccagacgga
30961 gttcttactt taaaatgttt aaccccacta acaaccacag gcggatctct acagctaaaa
31021 gtgggagggg gacttacagt ggatgacact gatggtacct tacaagaaaa catacgtgct
31081 acagcaccca ttactaaaaa taatcactct gtagaactat ccattggaaa tggattagaa
31141 actcaaaaca ataaactatg tgccaaattg ggaaatgggt taaaatttaa caacggtgac
31201 atttgtataa aggatagtat taacaccta tggactggaa taaaccctcc acctaactgt
31261 caaattgtgg aaaacactaa tacaaatgat ggcaaactta ctttagtatt agtaaaaaat
31321 ggagggcttg ttaatggcta cgtgtctcta gttggtgtat cagacactgt gaaccaaatg
31381 ttcacacaaa agacagcaaa catccaatta agattatatt ttgactcttc tggaaatcta
31441 ttaactgagg aatcagactt aaaaattcca cttaaaaata aatcttctac agcgaccagt
31501 gaaactgtag ccagcagcaa agcctttatg ccaagtacta cagcttatcc cttcaacacc
31561 actactaggg atagtgaaaa ctacattcat ggaatatgtt actacatgac tagttatgat
31621 agaagtctat ttcccttgaa catttctata atgctaaaca gccgtatgat ttcttccaat
31681 gttgcctatg ccatacaatt tgaatggaat ctaaatgcaa gtgaatctcc agaaagcaac
31741 atagctacgc tgaccacatc cccctttttc ttttcttaca ttacagaaga cgacaactaa
31801 aataaagttt aagtgttttt atttaaaatc acaaaattcg agtagttatt ttgcctccac
31861 cttcccattt gacagaatac accaatctct ccccacgcac agctttaaac atttggatac
31921 cattagagat agacattgtt ttagattcca cattccaaac agtttcagag cgagccaatc
31981 tggggtcagt gatagataaa aatccatcgc gatagtcttt taaagcgctt tcacagtcca
32041 actgctgcgg atgcgactcc ggagtttgga tcacggtcat ctggaagaag aacgatggga
32101 atcataatcc gaaaacggta tcggacgatt gtgtctcatc aaacccacaa gcagccgctg
32161 tctgcgtcgc tccgtgcgac tgctgtttat gggatcaggg tccacagttt cctgaagcat
32221 gatttta ata gcccttaaca tcaactttct ggtgcgatgc gcgcagcaac gcattctgat
32281 ttcactcaaa tctttgcagt aggtacaaca cattattaca atattgttta ataaaccata
32341 attaaaagcg ctccagccaa aactcatatc tgatataatc gcccctgcat gaccatcata
32401 ccaaagttta atataaatta aatgacgttc cctcaaaaac acactaccca catacatgat
32461 ctcttttggc atgtgcatat taacaatctg tctgtaccat ggacaacgtt ggttaatcat
32521 gcaacccaat ataaccttcc ggaaccacac tgccaacacc gctcccccag ccatgcattg
32581 aagtgaaccc tgctgattac aatgacaatg aagaacccaa ttctctcgac cgtgaatcac
32641 ttgagaatga aaaatatcta tagtggcaca acatagacat aaatgcatgc atcttctcat
32701 aatttttaac tcctcaggat ttagaaacat atcccaggga ataggaagct cttgcagaac
32761 agtaaagctg gcagaacaag gaagaccacg aacacaactt acactatgca tagtcatagt
32821 atcacaatct ggcaacagcg ggtggtcttc agtcatagaa gctcgggttt cattttcctc
32881 acaacgtggt aactgggctc tggtgtaagg gtgatgtctg gcgcatgatg tcgagcgtgc
32941 gcgcaacctt gtcataatgg agttgcttcc tgacattctc gtattttgta tagcaaaacg
33001 cggccctggc agaacacact cttcttcgcc ttctatcctg ccgcttagcg tgttccgtgt
33061 gatagttcaa gtacagccac actcttaagt tggtcaaaag aatgctggct tcagttgtaa
33121 tcaaaactcc atcgcatcta attgttctga ggaaatcatc cacggtagca tatgcaaatc
33181 ccaaccaagc aatgcaactg gattgcgttg caagcaggag aggagaggga agagacggaa
33241 gaaccatgtt aatttttatt ccaaacgatc tcgcagtact tcaaattgta gatcgcgcag
33301 atggcatctc tcgcccccac tgtgttggtg aaaaagcaca gctaaatcaa aagaaatgcg
33361 attttcaagg tgctcaacgg tggcttccaa caaagcctcc acgcgcacat ccaagaacaa
33421 aagaatacca aagaaggag cattttctaa ctcctcaatc atcatattac attcctgcac
33481 cattcccaga taatttcag ctttccagcc ttgaattatt cgtgtcagtt cttgtggtaa
33541 atccaatcca cacattacaa acaggtcccg gagggcgccc tccaccacca ttcttaaaca
33601 caccctcata atgacaaaat atcttgctcc tgtgtcacct gtagcgaatt gagaatggca
33661 acatcaattg acatgcccct ggctctaagt tcttctttaa gttctagttg taaaaactct
33721 ctcatattat caccaaactg cttagccaga agccccccgg gaacaagagc aggggacgct
33781 acagtgcagt acaagcgcag acctccccaa ttggctccag caaaaacaag attggaataa
33841 gcatattggg aaccaccagt aatatcatcg aagttgctgg aaatataatc aggcagagtt
33901 tcttgtagaa attgaataaa agaaaaattt gccaaaaaaa cattcaaaac ctctgggatg
33961 caaatgcaat aggttaccgc gctgcgctcc aacattgtta gttttgaatt agtctgcaaa
```

FIG. 2A-9

```
34021 aataaaaaaa aaacaagcgt catatcatag tagcctgacg aacaggtgga taaatcagtc
34081 tttccatcac aagacaagcc acagggtctc cagctcgacc ctcgtaaaac ctgtcatcgt
34141 gattaaacaa cagcaccgaa agttcctcgc ggtgaccagc atgaataagt cttgatgaag
34201 catacaatcc agacatgtta gcatcagtta aggagaaaaa acagccaaca tagcctttgg
34261 gtataattat gcttaatcgt aagtatagca aagccacccc tcgcggatac aaagtaaaag
34321 gcacaggaga ataaaaaata taattatttc tctgctgctg tttaggcaac gtcgcccccg
34381 gtccctctaa atacacatac aaagcctcat cagccatggc ttaccagaga aagtacagcg
34441 ggcacacaaa ccacaagctc taaagtcact ctccaacctc tccacaatat atatacacaa
34501 gccctaaact gacgtaatgg gactaaagtg taaaaaatcc cgccaaaccc aacacacacc
34561 ccgaaactgc gtcaccaggg aaaagtacag tttcacttcc gcaatcccaa caagcgtcac
34621 ttcctctttc tcacggtacg tcacatccca ttaacttaca acgtcatttt cccacggccg
34681 cgccgcccct tttaaccgtt aaccccacag ccaatcacca cacggcccac acttttttaaa
34741 atcacctcat ttacatattg gcaccattcc atctataagg tatattattg atgatg
SEQ ID NO: 1
```

FIG. 2A-10

Amp^r   ori   Ad35 ITR cassette

Pme I

Pme I
(bp 4 to 456)

(bp 34419 to 34793)

Swa I   Δ E1

ITR   ITR

(bp 3403 to 3886)

wt Ad35 Viral DNA
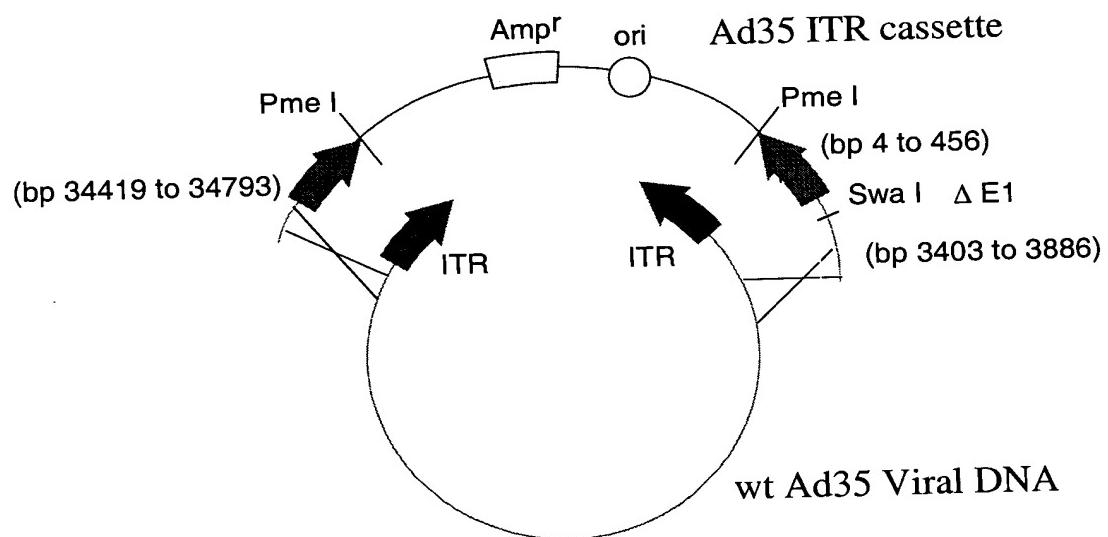
FIG. 3
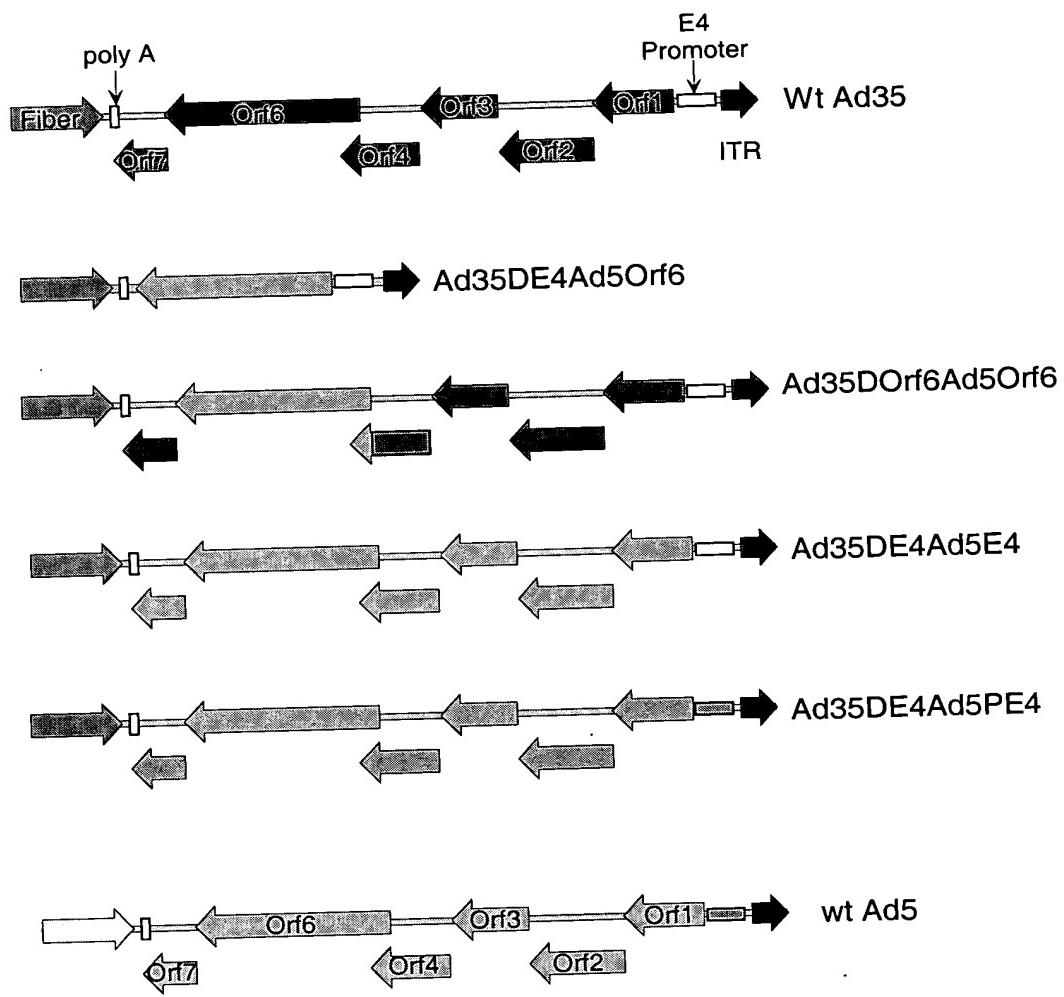
FIG. 4

FIG. 5

```
   1 ccattgcata cgttgtatcc atatcataat atgtacattt atattggctc atgtccaaca
  61 ttaccgccat gttgacattg attattgact agttattaat agtaatcaat tacggggtca
 121 ttagttcata gcccatatat ggagttccgc gttacataac ttacggtaaa tggcccgcct
 181 ggctgaccgc ccaacgaccc ccgcccattg acgtcaataa tgacgtatgt tcccatagta
 241 acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta aactgcccac
 301 ttggcagtac atcaagtgta tcatatgcca agtacgcccc ctattgacgt caatgacggt
 361 aaatggcccg cctggcatta tgcccagtac atgaccttat gggactttcc tacttggcag
 421 tacatctacg tattagtcat cgctattacc atggtgatgc ggttttggca gtacatcaat
 481 gggcgtggat agcggtttga ctcacgggga tttccaagtc tccaccccat tgacgtcaat
 541 gggagtttgt tttggcacca aaatcaacgg gactttccaa aatgtcgtaa caactccgcc
 601 ccattgacgc aaatgggcgg taggcgtgta cggtgggagg tctatataag cagagctcgt
 661 ttagtgaacc gtcagatcgc ctggagacgc catccacgct gttttgacct ccatagaaga
 721 caccgggacc gatccagcct ccgcggccgg gaacggtgca ttggaacgcg gattccccgt
 781 gccaagagtg agatctaccA TGGGTGCTAG GCTTCTGTG CTGTCTGGTG GTGAGCTGGA
 841 CAAGTGGGAG AAGATCAGGC TGAGGCCTGG TGGCAAGAAG AAGTACAAGC TAAAGCACAT
 901 TGTGTGGGCC TCCAGGGAGC TGGAGAGGTT TGCTGTGAAC CCTGGCCTGC TGGAGACCTC
 961 TGAGGGGTGC AGGCAGATCC TGGGCCAGCT CCAGCCCTCC CTGCAAACAG GCTCTGAGGA
1021 GCTGAGGTCC CTGTACAACA CAGTGGCTAC CCTGTACTGT GTGCACCAGA AGATTGATGT
1081 GAAGGACACC AAGGAGGCCC TGGAGAAGAT TGAGGAGGAG CAGAACAAGT CCAAGAAGAA
1141 GGCCCAGCAG GCTGCTGCTG GCACAGGCAA CTCCAGCCAG GTGTCCCAGA ACTACCCCAT
1201 TGTGCAGAAC CTCCAGGGCC AGATGGTGCA CCAGGCCATC TCCCCCCGGA CCCTGAATGC
1261 CTGGGTGAAG GTGGTGGAGG AGAAGGCCTT CTCCCCTGAG GTGATCCCCA TGTTCTCTGC
1321 CCTGTCTGAG GGTGCCACCC CCCAGGACCT GAACACCATG CTGAACACAG TGGGGGGCCA
1381 TCAGGCTGCC ATGCAGATGC TGAAGGAGAC CATCAATGAG GAGGCTGCTG AGTGGGACAG
1441 GCTGCATCCT GTGCACGCTG GCCCCATTGC CCCCGGCCAG ATGAGGGAGC CCAGGGGCTC
1501 TGACATTGCT GGCACCACCT CCACCCTCCA GGAGCAGATT GGCTGGATGA CCAACAACCC
1561 CCCCATCCCT GTGGGGGAAA TCTACAAGAG GTGGATCATC CTGGGCCTGA CAAGATTGT
1621 GAGGATGTAC TCCCCCACCT CCATCCTGGA CATCAGGCAG GGCCCCAAGG AGCCCTTCAG
1681 GGACTATGTG GACAGGTTCT ACAAGACCCT GAGGGCTGAG CAGGCCTCCC AGGAGGTGAA
1741 GAACTGGATG ACAGAGACCC TGCTGGTGCA GAATGCCAAC CCTGACTGCA AGACCATCCT
1801 GAAGGCCCTG GGCCCTGCTG CCACCCTGGA GGAGATGATG ACAGCCTGCC AGGGGGTGGG
1861 GGGCCCTGGT CACAAGGCCA GGGTGCTGGC TGAGGCCATG TCCCAGGTGA CCAACTCCGC
1921 CACCATCATG ATGCAGAGGG GCAACTTCAG GAACCAGAGG AAGACAGTGA AGTGCTTCAA
1981 CTGTGGCAAG GTGGGCCACA TTGCCAAGAA CTGTAGGGCC CCCAGGAAGA AGGGCTGCTG
2041 GAAGTGTGGC AAGGAGGGCC ACCAGATGAA GGACTGCAAT GAGAGGCAGG CCAACTTCCT
2101 GGGCAAAATC TGGCCCTCCC ACAAGGGCAG GCCTGGCAAC TTCCTCCAGT CCAGGCCTGA
2161 GCCCACAGCC CCTCCCGAGG AGTCCTTCAG GTTTGGGGAG GAGAAGACCA CCCCCAGCCA
2221 GAAGCAGGAG CCCATTGACA AGGAGCTGTA CCCCCTGGCC TCCCTGAGGT CCCTGTTTGG
2281 CAACGACCCC TCCTCCCAGT AAaataaagc ccgggcagat ctgatctgct gtgccttcta
2341 gttgccagcc atctgttgtt tgccctccc ccgtgccttc cttgaccctg gaaggtgcca
2401 ctcccactgt cctttcctaa taaaatgagg aaattgcatc gcattgtctg agtaggtgtc
2461 attctattct ggggggtggg gtggggcagc acagcaaggg ggaggattgg gaagacaata
2521 gcaggcatgc tggggatgcg gtgggctcta
SEQ ID NO: 2
```

FIG. 6

```
   1 ccattgcata cgttgtatcc atatcataat atgtacattt atattggctc atgtccaaca
  61 ttaccgccat gttgacattg attattgact agttattaat agtaatcaat tacggggtca
 121 ttagttcata gcccatatat ggagttccgc gttacataac ttacggtaaa tggcccgcct
 181 ggctgaccgc ccaacgaccc ccgcccattg acgtcaataa tgacgtatgt tcccatagta
 241 acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta aactgcccac
 301 ttggcagtac atcaagtgta tcatatgcca agtacgcccc ctattgacgt caatgacggt
 361 aaatggcccg cctggcatta tgcccagtac atgaccttat gggactttcc tacttggcag
 421 tacatctacg tattagtcat cgctattacc atggtgatgc ggttttggca gtacatcaat
 481 gggcgtggat agcggtttga ctcacgggga tttccaagtc tccaccccat tgacgtcaat
 541 gggagtttgt tttggcacca aaatcaacgg gactttccaa aatgtcgtaa caactccgcc
 601 ccattgacgc aaatgggcgg taggcgtgta cggtgggagg tctatataag cagagctcgt
 661 ttagtgaacc gtcagatcgc ctggagacgc catccacgct gttttgacct ccatagaaga
 721 caccgggacc gatccagcct ccgcggccgg gaacggtgca ttggaacgcg gattccccgt
 781 gccaagagtg agatcgatct aagtaagctt CCTGCATGCT GCTGCTGCTG CTGCTGCTGG
 841 GCCTGAGGCT ACAGCTCTCC CTGGGCATCA TCCCAGTTGA GGAGGAGAAC CCGGACTTCT
 901 GGAACCGCGA GGCAGCCGAG GCCCTGGGTG CCGCCAAGAA GCTGCAGCCT GCACAGACAG
 961 CCGCCAAGAA CCTCATCATC TTCCTGGGCG ATGGGATGGG GGTGTCTACG GTGACAGCTG
1021 CCAGGATCCT AAAAGGGCAG AAGAAGGACA AACTGGGGCC TGAGATACCC CTGGCCATGG
1081 ACCGCTTCCC ATATGTGGCT CTGTCCAAGA CATACAATGT AGACAAACAT GTGCCAGACA
1141 GTGGAGCCAC AGCCACGGCC TACCTGTGCG GGGTCAAGGG CAACTTCCAG ACCATTGGCT
1201 TGAGTGCAGC CGCCCGCTTT AACCAGTGCA ACACGACACG CGGCAACGAG GTCATCTCCG
1261 TGATGAATCG GGCCAAGAAA GCAGGGAAGT CAGTGGGAGT GGTAACCACC ACACGAGTGC
1321 AGCACGCCTC GCCAGCCGGC ACCTACGCCC ACACGGTGAA CCGCAACTGG TACTCGGACG
1381 CCGACGTGCC TGCCTCCGCC CGCCAGGAGG GGTGCCAGGA CATCGCTACG CAGCTCATCT
1441 CCAACATGGA CATTGACGTG ATCCTAGGTG GAGGCCGAAA GTACATGTTT CGCATGGGAA
1501 CCCCAGACCC TGAGTACCCA GATGACTACA GCCAAGGTGG GACCAGGCTG GACGGGAAGA
1561 ATCTGGTGCA GGAATGGCTG GCGAAGCGCC AGGGTGCCCG GTATGTGTGG AACCGCACTG
1621 AGCTCATGCA GGCTTCCCTG GACCCGTCTG TGACCCATCT CATGGGTCTC TTTGAGCCTG
1681 GAGACATGAA ATACGAGATC CACCGAGACT CCACACTGGA CCCCTCCCTG ATGGAGATGA
1741 CAGAGGCTGC CCTGCGCCTG CTGAGCAGGA ACCCCCGCGG CTTCTTCCTC TTCGTGGAGG
1801 GTGGTCGCAT CGACCATGGT CATCATGAAA GCAGGGCTTA CCGGGCACTG ACTGAGACGA
1861 TCATGTTCGA CGACGCCATT GAGAGGGCGG GCCAGCTCAC CAGCGAGGAG GACACGCTGA
1921 GCCTCGTCAC TGCCGACCAC TCCCACGTCT TCTCCTTCGG AGGCTACCCC CTGCGAGGGA
1981 GCTCCATCTT CGGGCTGGCC CCTGGCAAGG CCCGGGACAG GAAGGCCTAC ACGGTCCTCC
2041 TATACGGAAA CGGTCCAGGC TATGTGCTCA AGGACGGCGC CCGGCCGGAT GTTACCGAGA
2101 GCGAGAGCGG GAGCCCCGAG TATCGGCAGC AGTCAGCAGT GCCCCTGGAC GAAGAGACCC
2161 ACGCAGGCGA GGACGTGGCG GTGTTCGCGC GCGGCCCGCA GGCGCACCTG GTTCACGGCG
2221 TGCAGGAGCA GACCTTCATA GCGCACGTCA TGGCCTTCGC CGCCTGCCTG GAGCCCTACA
2281 CCGCCTGCGA CCTGGCGCCC CCCGCCGGCA CCACCGACGC CGCGCACCCG GGTTAAcccg
2341 tggtccccgc gttgcttcct ctgctggccg ggacatcagg tggcccccgc tgaattggaa
2401 tcgatcagaa ttgatctgat ctgctgtgcc ttctagttgc cagccatctg ttgtttgccc
2461 ctccccgtg ccttccttga ccctggaagg tgccactccc actgtccttt cctaataaaa
2521 tgaggaaatt gcatcgcatt gtctgagtag gtgtcattct attctggggg gtggggtggg
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2641 ctcta
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SEQ ID NO: 3

FIG. 7
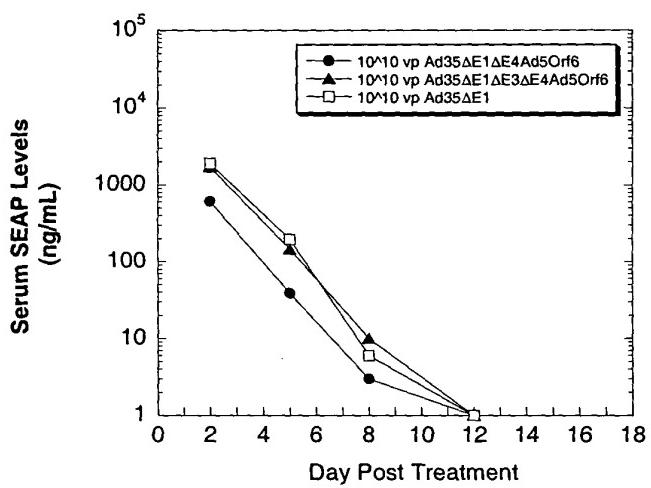
FIG. 8
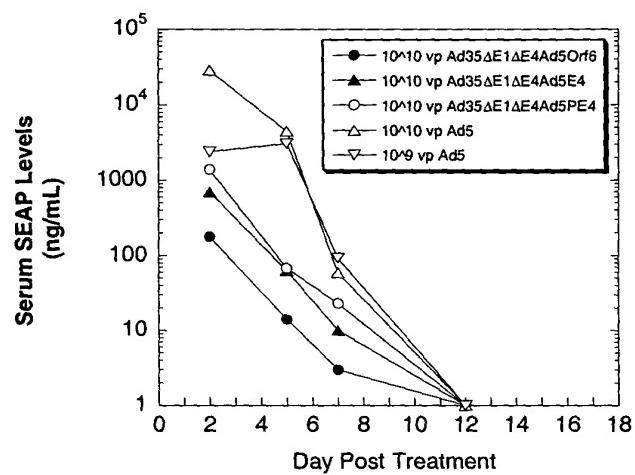
FIG. 9
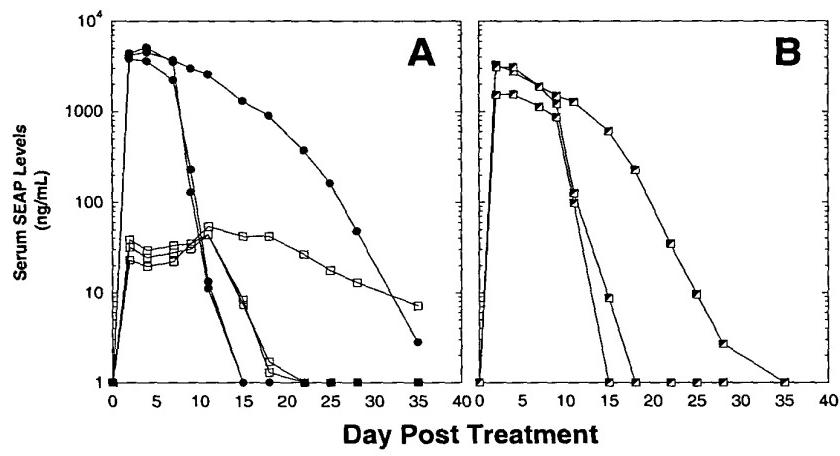
FIG. 10A-B
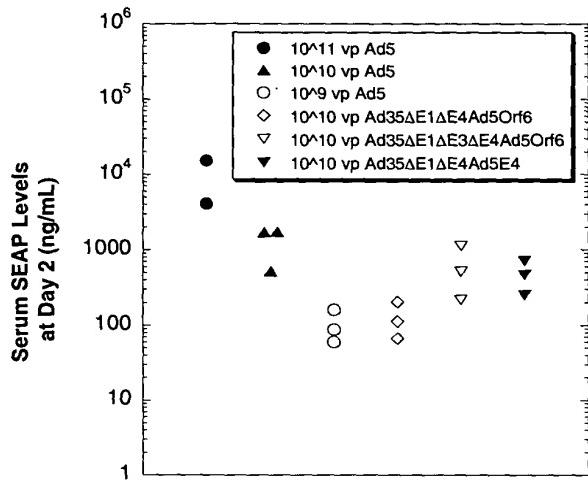
FIG. 11
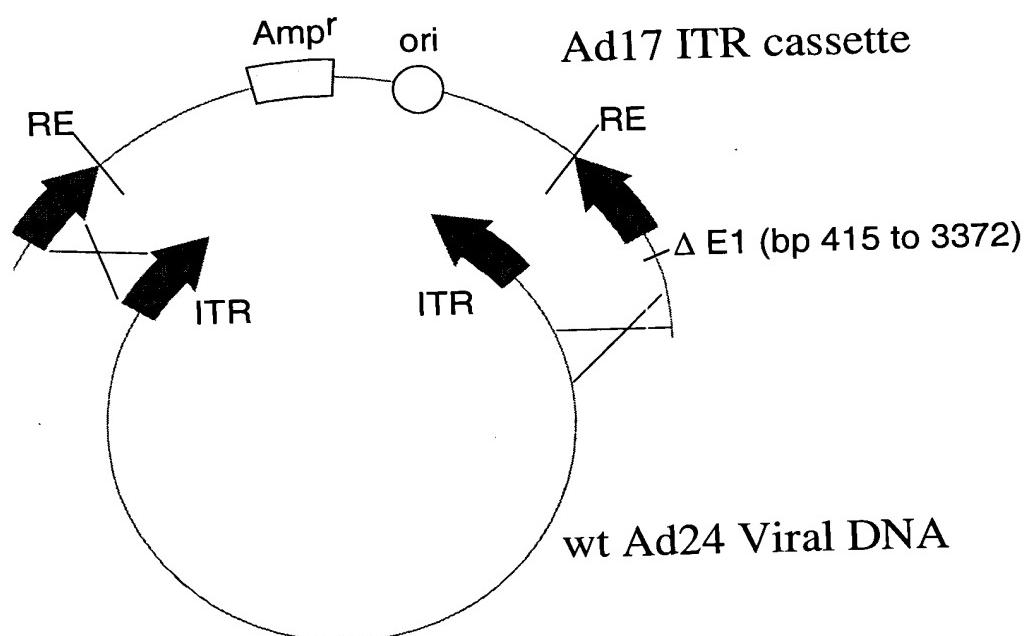
FIG. 12
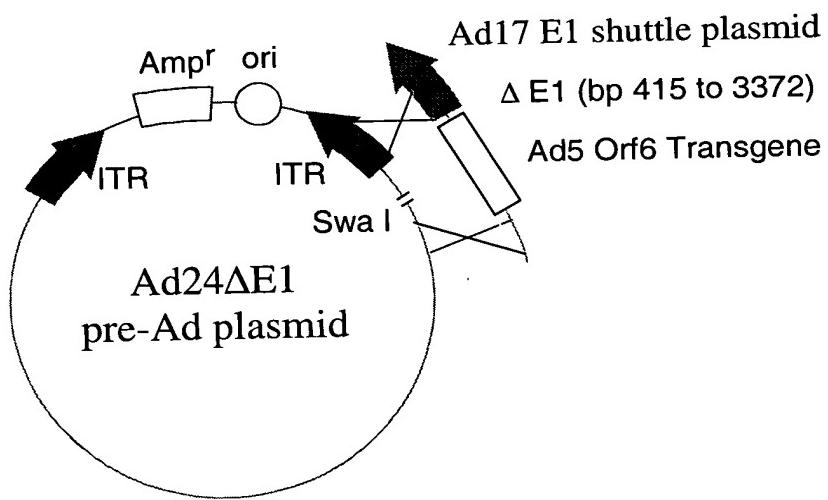
FIG. 13
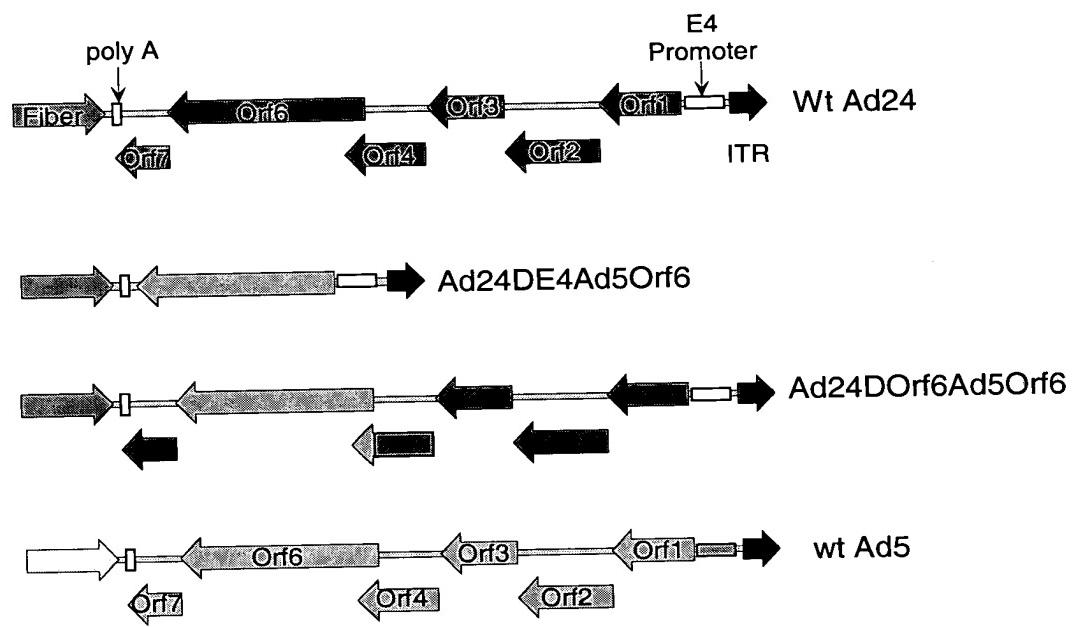
FIG. 14

Growth Curve Comparison of Ad24 Based Vectors

Legend:
- Ad24DE1
- Ad24DE1Ad5Orf6
- Ad24DE1DE4Ad5Orf6
- Ad24DE1DOrf6Ad5Orf6

y-axis: genomes/ml

x-axis: Hours post infection
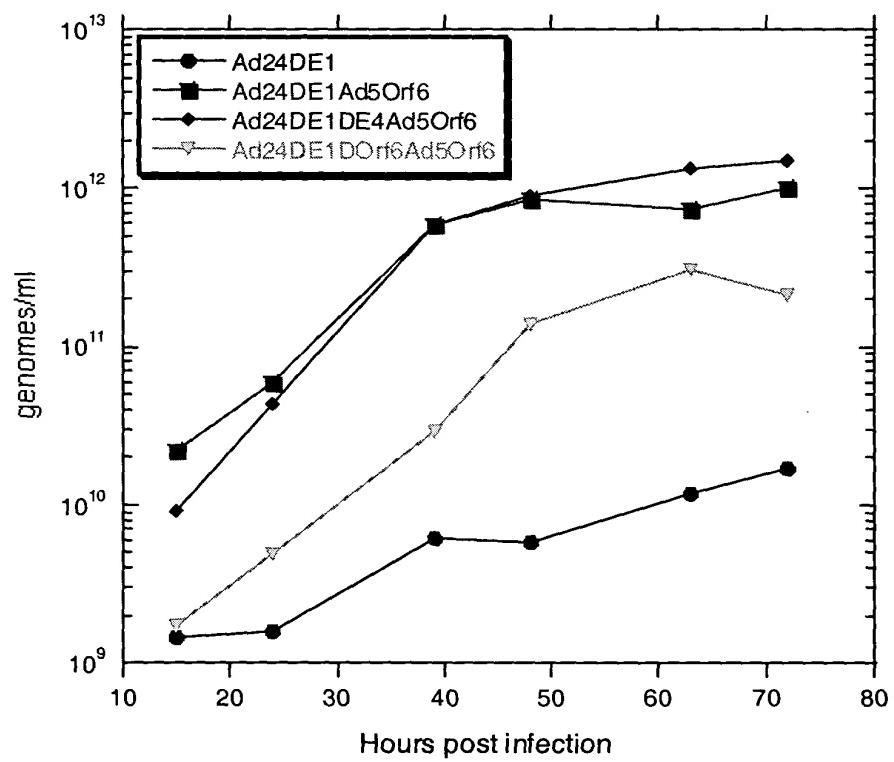
FIG. 15

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 121 acggctaacg gtcgccgcgg aggcgtggcc tagcccggaa gcaagtcgcg gggctgatga
 181 cgtataaaaa agcggacttt agaccccggaa acggccgatt ttcccgcggc cacgcccgga
 241 tatgaggtaa ttctgggcgg atgcaagtaa aattaggtca ttttggcgcg aaaactgaat
 301 gaggaagtga aaagtgaaaa ataccggtcc cgcccagggc ggaatattta ccgagggccg
 361 agagactttg accgattacg tggggtttc gattgcggtg tttttcgcg aatttccgcg
 421 tccgtgtcaa agtccggtgt ttatgtcaca gatcagctga tccacagggt atttaaacca
 481 gtcgagcccg tcaagaggcc actcttgagt gccagcgagt agagatttct ctgagctccg
 541 ctcccagagt ctgagaaaaa tgagacacct gcgcctcctt tcttcaactg tgcctattga
 601 catggccgca ttattgctgg aggattatgt gagtacaata ttggaggacg aactgcatcc
 661 atctccattt gagctgggac ctacacttca ggacctatat gatttggagg tagatgccca
 721 tgatgacgac ccgaacgaag aggctgtgaa tttaatattt ccagaatctc tgattcttca
 781 ggctgacata gccagcgaag ctgtacctac accacttcat acaccgactc tgtcacccat
 841 acctgaattg gaagaggagg acgagctaga cctccgatgt tatgaggaag gtttttcctcc
 901 cagcgattca gaggacgaac agggtgagca gagcatggct ctaatctcaa aatatgcttg
 961 tgtggttgtg gaagagcatt ttgtgttgga caatcctgag gtgcccgggc aaggctgtag
1021 atcctgccag taccaccggg ataagaccgg agacacgaac gcctcctgcg ctctgtgtta
1081 catgaaaaag aacttcagct ttatttacag taagtggagt gaatgtgaga gagactgagt
1141 gcttaacaca taactgggta atgcttaaac agctgtgcta agtgtggttt attttttgttt
1201 ctaggtccgg tgtcagagga tgagtcatca ccctcagaag aagaccaccc gtgtccccct
1261 gagctgtcag gcgaaacgcc cctgcaagtg cacagaccca ccccagtcag acccagtggc
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1381 cctttggacc tgagcttgaa acgccccagg aactaggctc agctgtgctt agtcatgtgt
1441 aaataaagtt gtacaataaa agtatatgtg acgcatgcaa ggtgtggttt atgactcatg
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1561 agttcctgat ggatgtgtgg actatccttg cagactttag caagacacgc cggcttgtag
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1801 tccacagcct tgattttca agcccagggc gcactacagc cggggttgct tttgtggttt
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2461 ctgctacatc tcggggaacg gggcagaggt ggtcatcgat accctggaca aggccgcctt
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2581 gaacatgaag ttcaatggag agaagtttaa tgggtgatg ttcatggcca acagtcacat
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2941 catgctgaca tgcgactcgg gggtctgcca tatcctgaag aacatccatg tgacctccca
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```

FIG. 16A-1

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3841  caaaataaat  gattcaataa  acacagattc  tgattcaaac  agcaaagcat  ctttattatt
3901  tatttttttcg cgcgcggtag  gccctggtcc  acctctcccg  atcattgaga  gtgcggtgga
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FIG. 16A-2

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7441  cagtccgtgc  tgctcgagcg  cccactcctg  gagatgtggg  ttggcttgca  tgaatgaagc
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9541  gcgaggagga  ccaggtcctt  gggtcccgct  tgctggatgc  gaagccgctc  ggccatgccc
9601  caggcctggc  cctgacaccg  gctcaggttc  ttgtagtagt  catgcatgag  cctctcaatg
9661  tcatcactgg  cggaggcgga  gtcttccatg  cgggtgaccc  cgacgcccct  gagcggctgc
9721  acgagcgcca  ggtcggcgac  gacgcgctcg  gcgaggatgg  cctgttgcac  gcgggtgagg
9781  gtgtcctgga  agtcgtccat  gtcgacgaag  cggtggtagg  ccccggtgtt  gatggtgtag
9841  gtgcagttgg  ccatgagcga  ccagttgacg  gtctgcagca  cgggttgcac  gacctctgag
9901  tacctgagcc  gcgagaaggc  gcgcgagtcg  aagacatagt  cgttgcaggt  gcgcacgagg
9961  tactggtatc  caactaggaa  gtgcggcggc  ggctggcggt  agagcggcca  cgcgctgggtg
10021 gccggcgcgc  ccggggccag  gtcctcgagc  atgaggcggt  ggtagccgta  gaggtagcgg
10081 gacatccagg  tgatgccggc  ggcggtggtg  gaggcgcgcg  ggaactcgcg  gacgcggttc
10141 cagatgttgc  gcagcggcag  gaaatagtcc  atggtcggca  cggtctggcc  ggtgagacgc
10201 gcgcagtcat  tgacgctcta  gaggcaaaaa  cgaaagcggt  tgagcgggct  cttcctccgt
10261 agcctggcgg  aacgcaaacg  ggttaggccg  cgtgtgtacc  ccggttcgag  tccccctcgaa
10321 tcaggctgga  ccgcgacta   acgtggtatt  ggcactcccg  tctcgacccg  agcccgatag
10381 ccgccaggat  acggcggaga  gccctttttg  ccgaccgagg  ggagtcgcta  gacttgaaag
10441 cggccgaaaa  ccccgccggg  tagtggctcg  cgcccgtagt  ctggagaagc  tttgccaggg
10501 ttgagtcgcg  gcagaacccg  gttcgcggac  ggccgcggcg  agcgggactt  ggtcaccccg
10561 ccgatttaaa  gacccacagc  cagccgactt  ctccagttac  gggagcgagc  cccctttttt
10621 ctttttgcca  gatgcatccc  gtcctgcgcc  aaatgcgtcc  cacccccccct  ccggcgacca
10681 ccgcgaccgc  ggccgtagca  ggcgccggcg  ctgtagcccc  gccacagcag  acagagatgg
10741 acttggaaga  gggcgaaggg  ctggcgagac  tggggcgcc   gtccccggag  cgacaccccc
10801 gcgtgcagct  gcagaaggac  gtgcgcccgg  cgtacgtgcc  tgcgcagaac  ctgttcaggg
10861 accgcagcgg  ggaggagccc  gaggagatgc  gcgactccg   ttttcggggcg  ggcagggagc
10921 tgcgcgaggg  cctggaccgc  cagcgcgtgc  tgcgcgacga  ggatttcgag  ccgaacgagc
```

<div align="center">FIG. 16A-3</div>

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10981 agacggggat cagccccgcg cgcgcgcacg tggcggcggc caacctggtg acggcctacg
11041 agcagacggt gaagcaggag cgcaacttcc aaaagagttt caacaaccat gtgcgcacgc
11101 taatcgcgcg cgaggaggtg gccctgggct tgatgcacct gtgggacctg gcggaggcca
11161 tcgtgcagaa cccggacagc aagcctctga cggcgcagct gttcctggtg gtgcagcaca
11221 gcagggacaa cgaggcgttc agggaggcgc tgctaaacat cgccgagccc gagggccgct
11281 ggctgctgga gctgatcaac atcttgcaga gcatcgtagt gcaggagcgc agcctgagcc
11341 tggccgagaa ggtggcggct atcaactact cggtgctgag cctgggcaag ttttacgcgc
11401 gcaagattta caagacgccg tacgtgccca tagacaagga ggtgaagata gacagctttt
11461 acatgcgcat ggcgctcaag gtgctgacgc tgagcgacga cctgggcgtg taccgcaacg
11521 accgcatcca caaggccgtg agcgcgagcc ggcggcgcga gctgagcgac cgcgagctga
11581 tgctgagtct gcgccgggcg ctggtagggg gcgccgcgg cggtgaggag tcctacttcg
11641 acatggggggc ggacctgcat tggcagccga ccgggcgcgc cttggaggcc gcctacggtc
11701 cagaggactt ggatgaggat gaggaagagg aggaggatgc acccgctgcg gggtactgac
11761 gcctccgtga tgtgttttta gatgcatcgaa gccccggacc ccgccataag ggcggcgctg
11821 caaagccagc cgtccggtct agcatcggac gactgggagg ccgcgatgca acgcatcatg
11881 gccctgacga cccgcaaccc cgagtccttt agacaacagc cgcaggccaa cagactctcg
11941 gccattctgg aggcggtggt cccctctcgg accaacccca cgcacgagaa ggtgctggcg
12001 atcgtgaacg cgctggcgga gaacaaggcc atccgtcccg acgaggcgg gctggtgtac
12061 aacgccctgc tggagcgcgt gggccgctac aacagcacaa acgtgcagtc caacctggac
12121 cggctggtga cggacgtgcg cgaggccgtg gcgcagcgcg agcggttcaa gaacgagggc
12181 ctgggctcgt tggtggcgct gaacgccttc ctggcgacgc agccggcgaa cgtgccgcgc
12241 gggcaggacg attacaccaa cttttatcagc gcgctgcggc tgatggtgac cgaggtgccc
12301 cagagcgagg tgtaccagtc gggcccagac tacttttttcc agacgagccg gcagggcttg
12361 cagacggtga acctaagcca ggctttcaag aatctgcgcg ggctgtgggg cgtgcaggcg
12421 cccgtgggcg accggtcgac ggtgagcagc ttgctaacgc ccaactcgcg gctgctgctg
12481 ctgctgacgc gcgcccttcac cgacagcgac agcgtgaacc gcaactcgta cctgggccac
12541 ctgctgacgc tttaccgcga ggccataggc caggcgcagg tggacgagca gaccttccag
12601 gagatcacta gcgtgagccg cgcgctgggt cagaacgaca ccgacagtct gagagccacc
12661 ctgaacttct tgctgacaaa tagacagcag aagattccgg cgcagtacgc gctgtcggcc
12721 gaggaggagc gcatcctgag atatgtgcag cagagcgtag ggctttttcct gatgcaggag
12781 gggggccaccc ccagcgccgc gctggacatg accgcgcgca acatggaacc tagcatgtac
12841 gccgccaacc ggccgttcat caataagctg atggactacc tgcaccgcgc ggctgccatg
12901 aactcggact actttactaa tgctatacta aacccgcact ggctccccgcc gccggggttc
12961 tacacgggcg agtacgacat gcccgacccc aacgatgggt tcctgtggga cgacgtggac
13021 agcgccggtgt tctcccccgac cttgcaaaag cgccaggagg cggtacgcac gcccgcgagc
13081 gagggcgggag tgggtcggag ccccttttcct agcttaggga gtttgcatag cttgccgggc
13141 tcggtgaaca gcggcagggt gagccggccg cgcttgctgg gcgaggacga gtacctgaac
13201 gactcgctgc tgcagccgcc gcgggtcaag aacgccatgg ccaataacgg gatagagagt
13261 ctggtggaca aactgaaccg ctggaagacc tacgctcagg accataggga tgcgcccgcg
13321 ccgcggcgac agcgccacga ccggcagcgg ggcctggtgt gggacgacga ggactcggcc
13381 gacgatagca gcgtgttgga cttgggcggg agcggtgggg ccaacccgtt cgcgcatctg
13441 cagcccagac tggggcgacg gatgttttga atgaaataaa actcaccaag gccatagcgt
13501 gcgttctctt ccttgttaga gatgaggcgc gcggtggtgt cttcctctcc tcctccctcg
13561 tacgagagcg tgatggcgca ggcaaccctg gaggttccgt ttgtgcctcc gcggtatatg
13621 gctcctacgg agggcagaaa cagcattcgt tactcggaac tggctccgca gtacgacacc
13681 actccgtgt acttggtga caacaagtcg gcggacatcg cttccctgaa ctaccaaaac
13741 gaccacagca acttcctgac cacggtggtg cagaacaacg atttcacccc cgccgaggcc
13801 agcacgcaga cgataaattt tgacgagcgg tcgcggtggg gcggtgattt gaagaccatt
13861 ctgcacacca acatgcccaa tgtgaacgag tacatgttca ccagcaagtt taaggcgcgg
13921 gtgatggtgg ctaggaaggt ggtagatcag aatgatagga gcaaggatga gttaaaatat
13981 gagtggtttg agtttacct gcccgagggc aacttttccg agaccatgac catagacctg
14041 atgaacaacg ccatcttgga aaactacttg caagtggggc ggcaaaatgg cgtgctggag
14101 agcgatatcg gagtcaagtt tgacagcagg aatttcaagc tgggctggga cccggtaacc
14161 aagctggtga tgcctggggt ctacacctac gaggccttcc acccggacgt tgtgctgctg
14221 ccgggctgcg gggtggactt caccgagagc cgcctgagca acctcctggg cattcgcaag
14281 aagcaacctt tccaagaggg cttcaggatc atgtatgagg atctctggtg gtggtaacatc
14341 cccgccctcc tggatgtcaa gcaatatttg gatagtaaaa agaagcttga ggaggcaaca
14401 cagaatgcaa ccagggctgc tggagatatc agaggagaca gtcatatcc aagagctgtg
14461 gaacaagcgg ctgaaaagga tctggtcatt gtaccagtaa cacaagatga aagtaagaga
14521 agctataatg tcatagatgg cacccatgac accctctacc gaagttggta cctgtcctat
14581 acctacgggg accccgagaa ggggggtgcag tcgtggacgc tgctcaccac cccggacgtc
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<center>FIG. 16A-4</center>

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14641 acctgcggcg cggagcaagt ctactggtcg ctgccggacc tcatgcaaga ccccgtcacc
14701 ttccgctcta cccagcaagt cagcaactac cccgtggttg gcgccgagct catgcccttc
14761 cgcgccaaga gcttttacaa cgacctcgcc gtctactccc agctcatccg cagctacacc
14821 tccctcaccc acgtcttcaa ccgcttcccc gacaaccaga tcctctgccg tccgcccgcg
14881 cccaccatca ccacggtcag tgaaaacgtg cctgctctca cagatcacgg gacgctaccg
14941 ctgcgcagca gtatccgcgg agtccagcga gtgaccgtca ctgacgcccg tcgccgcacc
15001 tgtccctacg tctacaaggc cctgggcata gtcgcgccgc gcgtgctttc cagtcgcacc
15061 ttctaaaaaa tgtctattct catctcgccc agcaataaca ccggctgggg tcttactagg
15121 cccagcacca tgtacggagg agccaagaag cgctcccagc agcaccccgt ccgcgtccgc
15181 ggccacttcc gcgctccctg gggcgcttac aagcgcgggc ggacttctac cgccgccgtg
15241 cgcaccaccg tcgacgacgt catcgactcg gtggtcgccg acgcgcgcaa ctatacccc
15301 gcccctcca ccgtggacgc ggtcatcgac agcgtggtgg ccgacgcgcg cgactatgcc
15361 agacgcaaga gccggcggcg acggatcgcc aggcgccacc ggagtacgcc cgccatgcgc
15421 gccgcccggg ctctgctgcg ccgcgccaga cgcacgggcc gccgggccat gatgcgagcc
15481 gcgcgccgcg ccgccactgc acccccgca ggcaggactc gcagacgagc ggccgccgcc
15541 gctgccgcgg ccatttctag catgaccaga cccaggcgcg gaaacgtgta ctgggtgcgc
15601 gactccgtca cgggcgtgcg cgtgcccgtg cgcacccgtc ctcctcgtcc ctgatctaat
15661 gcttgtgtcc tccccgcaa gcgacgatgt caaagcgcaa aatcaaggag gagatgctcc
15721 aggtcgtcgc cccggagatt tacggaccac cccaggcgga ccagaaaccc cgcaaaatca
15781 agcgggttaa aaaaaggat gaggtggacg aggggggcagt agagtttgtg cgcgagttcg
15841 ctccgcggcg gcgcgtaaat tggaaggggc gcagggtgca gcgcgtgttg cggcccggca
15901 cggcggtggt gtttacgccc ggcgagcggt cctcggtcag gagcaagcgt agctatgacg
15961 aggtgtacgg cgacgacgac atcctgacc aggcggcgga gcgggcgggc gagttcgcct
16021 acgggaagcg tcgcgcgaa gaggagctga tctcgttgcc gctggacgag agcaaccca
16081 cgcctagcct gaagcccgtg accctgcagc aggtgctgcc ccaagcagtg ctgctgccga
16141 gccgcggggt caagcgcgag ggcgagaata tgtacccgac catgcagatc atggtgccca
16201 agcgccggcg cgtggaagaa gtgctggaca ccgtgaaaat ggatgtggag cccgaggtca
16261 aggtgcgccc catcaagcag gtggcgccgg gcctgggcgt gcagaccgtg gacattcaga
16321 tccccaccga catggatgtt gacaaaaaac cctcgaccag catcgaggtg cagaccgacc
16381 cctggctccc agcctccacc gctgccgtct ccacttctac cgccgccacg gctaccgagc
16441 ctcccagaag gcgaagatgg ggcctgcca accggctgat gcccaactac gtattgcatc
16501 cttccattat cccgacgccg ggctatcgcg gcacccggta ctacgccagc cgcaggcgcc
16561 cagccagcaa acgccgccgc cgcaccgcca cccgccgccg tctggcccc gcccgcgtgc
16621 gccgcgtaac cacgcgcggc ggccgctcgc tcgttctgcc caccgtgcgc taccacccca
16681 gcatcctta atccgtgtgc tgtgatactg ttgcagagag atggctctca cttgccgcct
16741 gcgcatcccc gtcccgaatt accgaggaag atcccgccgc aggagaggca tggcaggcag
16801 cggcctcaac cgccgccggc ggcgggccat gcgcaggcgc ctgagtggcg gctttctgcc
16861 cgcgctcatc cccataatcg cggcggccat cggcacgatc ccgggcatag cttccgttgc
16921 gctgcaggcg tcgcagcgcc gttgatgtgc gaataaagcc tctttagact ctgacacacc
16981 tggtcctgta tattttaga atggaagaca tcaattttgc gtccctggct ccgcggcacg
17041 gcacgcggcc gttcatgggc acctggaacg agatcggcac cagccagctg aacggggggg
17101 ccttcaattg gagcagtgtc tggagcgggc ttaaaaattt cggctcgacg ctccggacct
17161 atgggaacaa ggcctggaat agtagcacgg ggcagttgtt aagggaaaag ctcaaagacc
17221 agaacttcca gcagaaggtg gtggacggcc tagcctcggg cattaacggg gtggtggaca
17281 tagcaaacca ggccgtgcag cgcgagataa acagccgcct ggacccgcgg ccgcccacgg
17341 tggtggagat ggaagatgca actcctccgc cgcccaaggg cgagaagcgg ccgcggcccg
17401 acgcggagga gacgatcctg caggtggacg agccgccctc gtacgaggag gccgtcaagg
17461 ccggcatgcc caccacgcgt atcatcgcgc cactggccac tggtgtaatg aaacccgcca
17521 cccttgacct gcctccgcca cccacgcccg ctccaccgaa ggcagctccg gttgtgcagc
17581 cccctcctgt ggcgaccgcc gtgcgccgcg tccccgcccg ccgccaggcc cagaactggc
17641 agagcacgct gcacagtatc gtgggcctgg gagtgaaaag tctgaagcgc cgccgatgct
17701 attgagagag aggaaagagg acactaaagg gagagcttaa cttgtatgtg ccttaccgcc
17761 agagaacgcg cgaagatggc tacccctcg atgatgccgc agtgggcgta catgcacatc
17821 gccgggcagg acgcctcgga gtacctgagc ccgggtctgg tgcagtttgc ccgcgccacc
17881 gacacgtact tcagcctggg caacaagttt aggaacccca cggtggctcc cacccacgat
17941 gtgaccacgg accggtccca gcgtctgacg ctgcgctttg tgcccgtgga tcgcgaggac
18001 accacgtact cgtacaaggc gcgcttcact ctggccgtgg gcgacaaccg ggtgctagac
18061 atggccagca cttactttga catccgcggc gtcctggacc gcggtcccag cttcaaaccc
18121 tactcgggca cggcttacaa cagcctggcc cccaaaggcg cccccaactc tagtcagtgg
18181 gaacaagcta aagctaccaa tgccggtcaa aaggaaactc acacatttgg agtagccgct
18241 atgggcggag aagacattac agtgaaaggt cttcaaattg gaactgatga aactaaggaa
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FIG. 16A-5

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18301 gatggagagg atgaaatttt tgcagatcaa acattccagc cagaacctca agtgggagaa
18361 cagaactggc aagaaacgtt tgttttctat ggaggcagag ctcttaagaa agaaaccaaa
18421 atgaagccat gttatggctc ttatgcgaga cccacaaatg aaaagggagg acaggctaaa
18481 tttacacttg atgaaaaagg tcagccaacc aaaattcctg atattacaat ggatttcttt
18541 gatagtccac aagatgatac atcaggtgta actaataagc cagatattgt catgtatgca
18601 gaaaatgtaa atttagaagc tcctgacaca catgtagttt acaaaccagg caaagatgat
18661 tctagttctt ccgctaacct cacacaacag gccatgccta acagaccgaa ctacatcggg
18721 ttcagagaca actttgtggg tcttatgtac tacaatagta ctggcaacat gggtgtgctg
18781 gctggtcagg cctctcagtt gaatgctgtg gtcgacttgc aagacagaaa caccgagctg
18841 tcttaccagc tattgctaga ttctctgggt gacagaacca gatactttag catgtggaat
18901 tctgcagtgg acagctatga ccccgatgtc aggatcattg agaatcacgg tgtggaagat
18961 gaacttccaa actattgctt cccactgaat ggcagtggtt ctaacagcac atacaaaggt
19021 gttaaagctg gaactggaaa caattgggat gacgatgaaa atgttgcaag acaaaatcag
19081 attggcactg gcaacctgtt cgccatggag atcaacctcc aggccaacct atggaagagt
19141 tttctgtact cgaacgtggc cctgtacctg cccgactcct acaagtacac gccggccaac
19201 gtcacgctgc ccaccaacac caacacctac gactacatga cggccgcgt ggtagccccc
19261 tcgctggtgg acgcctacat caacattggc gcccgctggt cgctggaccc catggacaat
19321 gtcaatccct tcaaccacca ccgcaacgcg ggcctgcgct accgtccat gctcctgggc
19381 aacggccgct acgtgccctt ccacatccaa gtgccccaaa agttctttgc catcaagaac
19441 ctgcttctgc tccccggttc ctacacctac gagtggaact ccgcaagga cgtcaacatg
19501 atcctgcaga gttccctcgg caacgacctg cgcgtcgacg gcgcctccgt ccgcttcgac
19561 agcgtcaacc tctacgccac cttcttcccc atggcgcaca acaccgcctc caccctggaa
19621 gccatgctgc gcaacgacac caacgaccag tccttcaacg actacctctc ggccgccaac
19681 atgctctacc ccatcccggc caaggccacc aacgtgccca tctccatccc ctcgcgcaac
19741 tgggccgcct tccgcggctg gagtttcacc cggctcaaga ccaaggaaac tccctccctc
19801 ggctcgggtt tcgacccta ctttgtctac tcgggctcca tccctacct cgacgggacc
19861 ttctacctca accacacctt caagaaggtc tccatcatgt tcgactcctc ggtcagctgg
19921 cccggcaacg accggctgct cacgccgaac gagttcgaga tcaagcgcag cgttgacggg
19981 gagggctaca acgtggccca atgcaacatg accaaggact ggttcctcgt ccagatgctc
20041 tcccactaca acatcggcta ccagggcttc cacgtgcccg agggctacaa ggaccgcatg
20101 tactccttct tccgcaactt ccagcccatg agcaggcagg tggtcgatga gatcaactac
20161 aaggactaca aggccgtcac cctacccttc cagcacaaca actgctcaaca actcgggctt caccggctac
20221 cttgcgccca ccatgcgcca ggggcagccc taccccgcca acttccccta cccgctcatc
20281 ggctccaccg cagttccctc cgtcacccag aaaaagttcc tctgcgacag ggtcatgtgg
20341 cgcatcccat tctccagcaa ctttatgtcc atgggcgccc tcaccgacct gggtcagaac
20401 atgctctatg ccaactcggc ccacgcgctc gacatgacct tgaggtgga ccccatggat
20461 gagcccaccc tcctctatct tctcttcgaa gttttcgacg tggtcagagt gcaccagccg
20521 caccgcggcg tcatcgaggc cgtctacctg cgcacgccct tctccgccgg caacgctacc
20581 acttaagcat gagcggctcc agcgaacaag agctcgcggc catcgtgcgc gacctgggat
20641 gcgggcccta cttttggga acccacgaca agcgcttccc tggcttcctt gccggcgaca
20701 agctggcctg cgccatcgtc aacacggccg gccgcgagac cggaggcgtg cactggctcg
20761 cctttggctg gaatccgcgc tcgcgcacct gctacatgtt cgaccccttt gggttctcgg
20821 accgccggct caagcagatt tacagcttcg agtacgaggc catgctgagc cgaagcgcgc
20881 ttgcctcctc gcccgaccgc tgtctcagcc tcgagcagtc cacccagacc gtgcaggggc
20941 ccgactccgc cgcctgcgga cttttttgtt gcatgttttt gcatgccttc gtgcactggc
21001 ccgaccgacc catggacgga aaccccacca tgaacttgct gacggggtg ccaaacggca
21061 tgctacaatc gccacaggtg ctgcccaccc tcaggcgcaa ccaggaggag ctctaccgct
21121 tcctcgcgcg ccactcccct tactttcgat cccaccgcgc cgccatcgaa aacgccaccg
21181 cttttgataa aatgaaacaa ctgcgtgtat ctcaataaac agcactttat tttacatgca
21241 ctggagtata tgcaagttat ttaaaagtcg aaggggttct cgcgctcgtc gttgtgcgcc
21301 gcgctgggga gggccacgtt gcggtactgg tacttgggaa gccacttgaa ctcggggatc
21361 accagtttgg gcactggggt ctcggggaag gtctcgctcc acatgcgccg gctcatctgc
21421 agggcgccca gcatgtccgg gccggagatc ttgaaatcac aattggggcc ggtgctctgc
21481 gcgcgcgagt tgcgtgacac ggggttgcag cactggaaca ccattagact ggggtacttc
21541 acactggcaa gcacgctctt gtcgctgatc tgatccttgt ccaggtcctc ggcgttgctc
21601 aggccgaacg gggtcatctt gcacagctgg cggcccagga agggcacgct ctgaggcttg
21661 tggttacact cgcagtgcac gggcatcagc atcatccccg cgcgcgctg catattcggg
21721 tagagggcct tgacgaaggc cgtgatctgc ttgaaagctt gctgggcctt agccccctcg
21781 ctgaaaaaca ggccgcagct cttcccgcta aactggttat tcccgcaccc ggcatcatgc
21841 acgcagcagc gcgcgtcatg gctggtcagt gcaccacgc tacgtcccca gcggttctgg
21901 gtcaccttgg ccttgctggg ctgctccttc aacgcgcgct gcccgttctc gctggtcaca
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FIG. 16A-6

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21961  tccatctcca  ccacgtggtc  cttgtggatc  atcaccgtcc  catgcagaca  cttgagctga
22021  ccctcgacat  cgcagcagcc  atgatcccac  agggcgcagc  cggtgcactc  ccagttctta
22081  tgcgcgatcc  cgctgtggct  gaagatgtaa  ccttgcaaca  ggcgacccat  gacggtgcta
22141  aatgctttct  gggtggtgaa  ggtcagttgc  agaccgcggg  cctcctcgtt  catccaggtc
22201  tggcacatct  tttggaagat  ctcggtctgc  tcgggcatga  gcttgtaagc  atcgcgcagg
22261  ccgctgtcga  cgcggtagcg  ttccatcagc  acgttcatgg  tatccatgcc  cttctcccag
22321  gacgagacca  gaggcagact  caggggggttg  cgcacgttca  ggacaccggg  ggtcgcaggc
22381  tcgacgatgc  gttttccgtc  cttgccttcc  ttcaacagaa  ccggaggctg  gctgaatccc
22441  actcccacga  ttacggcatc  ttcctggggc  atctcttcgt  cggggtctac  cttggtcaca
22501  tgcttggtct  ttctggcttg  cttctttttt  ggagggctgt  ccacgggggac  cacgtcctcc
22561  tcggaagacc  cggagcccac  ccgctgatac  tttcggcgct  tggtgggcag  aggaggtggt
22621  ggcggcgagg  ggctcctctc  ctgctccggc  ggatagcgcg  ccgaccgtg   gccccggggc
22681  ggagtggcct  ctcgctccat  gaaccggcgc  acgtcctgac  tgccgccggc  cattgtttcc
22741  tagggggaaga  tggaggagca  gccgcgtaag  caggagcagg  aggaggactt  aaccacccac
22801  gagcaaccca  aaatcgagca  ggacctgggc  ttcgaagagc  cggctcgtct  agaaccccca
22861  caggatgaac  aggagcacga  gcaagacgca  ggccaggagg  agaccgacgc  tgggctccag
22921  catggctacc  tgggaggaga  ggaggatgtg  ctgctaaaac  acttgcagcg  ccaatccatc
22981  atcctccggg  acgccctggc  cgaccggagc  gaaacccctc  tcagcgtcga  ggagctgtgt
23041  cgggcctacg  agctcaacct  cttctcgccg  cgcgtgcccc  ccaaacgcca  gcccaacggc
23101  acctgcgagc  ccaacccgcg  tctcaacttc  tatcccgtct  ttgcggtccc  cgaggcccta
23161  gccacctatc  acatcttttt  caagaaccaa  aagatccccg  tctcctgccg  cgccaaccgc
23221  acccgcgccg  acgcgctcct  cgctctgggg  cccggcgcgc  gcatacctga  tatcgcttcc
23281  ctggaagagg  tgcccaagat  cttcgaaggg  ctcggtcggg  acgagacgcg  cgcggcaaac
23341  gctctgaaag  aaacagcaga  ggaagagggt  cacactagcg  ccctggtaga  gttggaaggc
23401  gacaacgcca  ggctggccgt  gctcaagcgc  agcgtcgagc  tcacccactt  cgcctacccc
23461  gccgtcaacc  tcccgcccaa  ggtcatgcgt  cgcatcatgg  atcagctcat  catgccccac
23521  atcgaggccc  tcgatgaaag  tcaggagcag  cgccccgagg  acgcccggcc  cgtggtcagc
23581  gacgagcagc  tcgcgcgttg  gctcgggacc  cgcgaccccc  aggctttgga  acagcggcgc
23641  aagctcatgc  tggccgtggt  cctggtcacc  ctcgagctcg  aatgcatgcg  ccgcttcttc
23701  agcgaccccg  agaccctgcg  taaggtcgag  gagaccctgc  actacacttt  caggcacggt
23761  ttcgtcaggc  aggcctgcaa  gatctccaac  gtggagctga  ccaacctggt  ctcatgcctg
23821  gggatcctgc  acgagaaccg  cctgggacag  accgtgctcc  actctactct  gaagggcgag
23881  gcgcgtcggg  actatgtccg  cgactgtgta  tttctcttta  tctgccacac  ctggcaagca
23941  gccatgggcg  tgtggcagca  gtgtctcgag  gacgaaaatc  tgaaggagct  ggacaagctt
24001  cttgctagaa  accttaaaaa  gctgtggacg  ggcttcgacg  agcgcaccgt  cgcctcggac
24061  ctggccgaga  tcgttttccc  agaaccgcctg  aggcagacgc  tgaaagcggg  gctgcccgac
24121  ttcatgagcc  agagcatgtt  gcaaaactac  cgcactttca  ttctcgagcg  atctgggatg
24181  ctacccgcca  cctgcaacgc  attcccctcc  gactttgtcc  cgctgagcta  ccgcgagtgt
24241  cccccgccgc  tgtggagcca  ctgctatctc  ttgcagctgg  ccaactacat  cgcctaccac
24301  tcggacgtga  tcgaggacgt  gagcggcgag  gggcttctcg  agtgccactg  ccgctgcaac
24361  ctgtgctccc  cgcaccgctc  cctggtctgc  aacccccagc  ttctgagcga  gacccaggtc
24421  atcggtacct  tcgagctgca  aggtccgcag  gagtccaccg  ctccgctgaa  actcacgccg
24481  gggttgtgga  cttccgcgta  cctgcgcaaa  tttgtacccg  aggactacca  cgcccatgaa
24541  ataaagttct  tcgaggacca  atcgcgccca  cagcacgcgg  atctcacggc  ctgcgtcatc
24601  acccagggcg  cgatcctcgc  ccaattgcac  gccatccaaa  aatcccgcca  agagtttctt
24661  ctaaaaaagg  gtagagggggt  ctacctggac  ccccagacgg  gcgaggtgct  caacccgggt
24721  ctcccccagc  atgccgagga  agaagcagga  gccgctagtg  gagcagatgg  aagaagaatg
24781  ggacagccag  gcagaggagg  acgaatggga  ggaggagaca  gaggaggaag  aattggaaga
24841  ggtggaagag  gagcaggaaa  cagagcagc   cgtcgccgca  ccatccgcgc  cggcagcccc
24901  gccggtcacg  gatacaacct  ccacagctcc  ggccaagcct  cctcgtagat  gggatcgagt
24961  gaagggtgac  ggtaagcacg  agcggcaggg  ctaccgatca  tggagggtcc  acaaagccgc
25021  gatcatcgcc  tgcttgcaag  actgcggggg  gaacatcgct  ttcgcccgcc  gctacctgct
25081  cttccaccgc  ggggtgaaca  tccccgcaa   cgtgttgcat  tactaccgtc  accttcacag
25141  ctaagaaaaa  gcaagtaaga  ggagtcgccg  gaggaggcct  gaggatcgcg  gcgaacgagc
25201  cctcgaccac  cagggagctg  aggaaccgga  tcttccccac  tctttatgcc  attttttcagc
25261  agagtcgagg  tcagcagcaa  gaactgaaag  taaaaaaccg  gtctctgcgc  tcgctcaccc
25321  gcagttgctt  gtaccacaaa  aacgaagatc  agctgcagcg  cactctcgaa  gacgccgagg
25381  ctctgttcca  caagtactgc  gcgctcactc  ttaaagacta  aggcgcgccc  acccggaaaa
25441  aaggcgggaa  ttacctcatc  gccaccatga  gcaaggagat  tcccacccct  tacatgtgga
25501  gctatcagcc  ccagatgggc  ctggccgcgg  gcgcctccca  ggactactcc  acccgcatga
25561  actggctcag  tgccggcccc  tcgatgatct  cacggggtcaa  cggggtccgt  aaccatcgaa
```

FIG. 16A-7

```
25621  accagatatt gttggagcag gcggcggtca cctccacgcc cagggcaaag ctcaacccgc
25681  gtaattggcc ctccaccctg gtgtatcagg aaatccccgg gccgactacc gtactacttc
25741  cgcgtgacgc actggccgaa gtccgcatga ctaactcagg tgtccagctg gccggcggcg
25801  cttcccggtg cccgctccgc ccacaatcgg gtataaaaac cctggtgatc cgaggcagag
25861  gcacacagct caacgacgag ttggtgagct cttcgatcgg tctgcgaccg gacggagtgt
25921  tccaactagc cggagccggg agatcgtcct tcactcccaa ccaggcctac ctgaccttgc
25981  agagcagctc ttcggagcct cgctccggag gcatcggaac cctccagttc gtggaggagt
26041  ttgtgccctc ggtctacttc aaccccttct cgggatcgcc aggcctctac ccggacgagt
26101  ttataccgaa cttcgacgca gtgagagaag cggtggacgg ctacgactga atgtcccatg
26161  gtgactcggc tgagctcgct cggttgaggc atctggacca ctgccgccgc ctgcgctgct
26221  tcgcccggga gagctgcgga ctcatctact ttgagtttcc cgaggagcac cccaacggcc
26281  ctgcacacgg agtgcggatc accgtagagg gcaccaccga gtctcacctg gtcaggttct
26341  tcacccagca acccttcctg gtcgagcggg accggggagc taccacctac accgtctact
26401  gcatctgtcc taccccgaag ttgcatgaga attttttgctg tactctttgt ggtgagttta
26461  ataaaagctg aactaagaac cttctttgga atcccttgtc atcatcaaat caacaagacc
26521  atcaacttca cctttgagga acaggtgaac tttacctgca agccacacaa gaagtacatc
26581  atctggtttt atcacaacac tactctagca gtagccaaca cctgctcgaa cgacggtgtt
26641  ctcctaccta acaatctcac cagtggacta accttctcag ttaaaagggc aaagctaatt
26701  cttcatcgcc ctattgtaga aggaacttac cagtgtcaga gcggaccttg cttccacagt
26761  ttcactttgg tgaacgttac cggcagcagc acagccgctc cagaaacatc taaccttctt
26821  tctgatacta acaaacctcg tgtcggaggt gagctttggg ttccatctct aacagagggt
26881  gggagttcta ttgaagtggt tgggtatttg attttagggg tggtcattgg tgggtgcata
26941  gcagtgctgt atcaacttcc ttgctgggtc gaaatcaggg tatttatctg ctgggtcaga
27001  cattgtgggg aggaaccatg aaggggctct tgctgattat cctttccctg gtggggggtg
27061  tgctgtcatg ccacgaacag ccacgatgta acattaccac aggcaatgag aggaacgact
27121  gctctgtagt tatcaaatgc gagcaccatt gtcctctcaa catcacattc aagaataaga
27181  ccatgggaaa tgtatgggtg ggattctggc aaccaggaga tgagcagaac tacacggtca
27241  ctgtccatgg tagcgatggc aatcacactt tcggtttcaa attcattttt gaagtcatgt
27301  gtgatatcac actacatgtg gctagacttc atggcttgtg gccccctacc aaggagaaca
27361  tggtgggttt ttctttggct tttgtgatca tggcctgctt gatgtcaggt ctgctggtag
27421  gggctctagt gtggttttctg aaacgcaagc ccaggtacgg aaatgaggag aaggaaaaat
27481  tgctataaat tcttttttctc ttcgcacaac catgaataca gtgttccgta tcgtgctgct
27541  ctctcttctt gtagctttcg gtcaggcagg aattcatatt attaatgcta catggtggga
27601  taatataact ttagtgggac cctcagatac tccagttacc tggtatgatg gcaagggatt
27661  gcaatttttgt gacggaagta cagttaagaa tccgcagatc agacatactt gtaatgatca
27721  aaacttaact ctgattcatg ttaacaaaac ccatgaaaga acatacatgg gttacagaca
27781  tgacagtaag ggaaaagtag actataaggt tacagtcatt ccacctcctc ctgctactgt
27841  aaagccacaa ccagatccag aaaatgtctt tgtttatatg ggaaataatg taactttagt
27901  tggacctcca ggaattccag ttagttggta ttatcataat ggcacacagt tctgcgatgg
27961  agataaaatt attcatccag aattcaacca cacctgtgat aaacaaaacc ttacactgct
28021  gtttgtaaac tttacacatg atggaggcta tcttggattc aattacaaag gtactcagag
28081  aattcagtat gaggttatag ttttagatcg atttccaaat tctggtcaga tgaaaattga
28141  agaacaaagt gaggaaacag aacagaaaca tactgagcat aataaggctg gacaaaagca
28201  gggctatagat acaaatcaaa agaaagctaa taacagacaa aagccatctc aaaggccatc
28261  aagaagacgg ccgacaaaca ctcctgagac aaaacaactt acagtgtcta ttgggtctaa
28321  cttaactttta gttggtccag atggaaaagt cacttggtat gatggtgatt taaaaagacc
28381  atgtgaagaa caaaactata ggcttccaca tcagtgtagt gctcagaact taactttaat
28441  taatgtaact aaatctcatg agggaactta ctatggcact aatgacaaag acgaaagcaa
28501  aagatacaga gtgaaagtga acactacaaa ttctcaagct gtaaaaatta acccatatac
28561  cagacctact actcctgatc agaaacacag atttgaatta caaattgaaa ataatgcaaa
28621  tgatgaagaa tcaaaaattc catctactac tgtggcaatc gtggtgggag tgattgcggg
28681  cttcataact ataatcattg tcattctgtg ctacatctgc tgccgcaagc gtcccagggc
28741  atacaatcat atggtagacc cactactcag cttctcttac tgagactcag tcactttcat
28801  ttcagaacca tgaaggcttt cacagcttgc gttctgttta acataatcac acttagtgta
28861  gctgcaaatg gtttttaaaca tgttaatgtt accagattaa gtaatgtaac actgacagga
28921  gctggaatta atactacatg gacaggatat tttaatgagg tccaaaagg aaaaaatggg
28981  tggatgaata tttgcacatg gggcgatcct agatatgtgt gccatggaaa tagcagtact
29041  attactaatc ttacagttgt ggcacttcta aatttaacca ctaacagaag atttaaagca
29101  gaaagtttta ctagtaacga tggttatgaa actaccagtg caaaatttta tgaaattaaa
29161  attattgagc ttccaacaac tagagcaccc accacagtta ggacaacaca gcctaccact
29221  gtgcccacta cacatccaac caccacagtc agtacaacta ttgagaccac tactcatact
```

FIG. 16A-8

```
29281  acacagctag  acacaacagt  gcagaatact  actttattga  ttgggttttt  actgagagga
29341  aatgaaagta  ctactgaaca  gacagaggct  acctcaagtg  ccttcagcag  cactgcaaat
29401  ttaacttcgc  ttgcttggac  taatgaaacc  ggagtatcat  tgatgaatcg  acagccttac
29461  tcaggtttgg  atattcaaat  tacttttctg  gttgtctgtg  ggatctttat  tcttgcggtt
29521  cttctgtact  ttgtctgctg  caaagccaga  gagaaatcta  ggcggcccat  atacaggcca
29581  gtaatcgggg  aacctcagcc  tctccaagtg  gatggaggct  taaggaatct  tctcttctct
29641  tttacagtat  ggtgatcagc  catgattcct  aggttcttcc  tatttaacat  cctgttctgt
29701  ctcttcaaca  tctgtgctgc  cttcgcggcc  gtctcgcacg  cctcgcccga  ctgtctaggg
29761  cctttcccaa  catacctcct  ctttgccctg  ctaacctgca  cctgcgtctg  cagcattgtc
29821  tgcgtggtca  tcacctttct  gcagctcatc  gactggtgct  gcgcgcgcta  caattatctc
29881  caccacagtc  ccgaatacag  ggacgagaac  gtagccagaa  tcttaaggct  catctgacca
29941  tgcagcctct  gctcatgctg  atatccctcc  tatcccctgc  ccttgccact  tctgctgatt
30001  actctaaatg  caaattcgcg  gacatatgga  atttcttaga  ttgctatcag  gagaaaattg
30061  atatgccctc  ctattacttg  gtgattgttg  gggtagtcat  ggtctgctca  tgcactttct
30121  ttgccattat  gatctacccc  tgttttaatc  ttggctggaa  ctctgttgag  gcattcacat
30181  acacactaga  aaacagttca  ctagcctcca  cgccaccacc  cacaccgcct  ccccgcagaa
30241  atcagttccc  tatgattcag  tacttagaag  agcccctcc   ccggcccct   tccactgtta
30301  gctactttca  cataaccggc  ggcgatgact  gaccacctgg  acctcgagat  ggacggccag
30361  gcctccgagc  agcgcatcct  gcaactgcgc  gtccgacagc  agcaggagcg  ggccgccaag
30421  gagctcctcg  atgccatcaa  catccaccag  tgcaagaagg  gcatcttctg  cctggtcaag
30481  caggcaaaga  tcacctacga  gctcgtgtcc  ggcggcaagc  agcatcgcct  cgcctatgag
30541  ctaccccagc  agaagcaaaa  gttcacctgc  atggtgggcg  tcaaccccat  agtcatcacc
30601  cagcagtcgg  gcgagaccaa  cggctgcatc  cactgctcct  gcgaaagccc  cgagtgcatc
30661  tactccctcc  tcaagaccct  ttgcggactc  cgcgacctcc  tccccatgaa  ctgatgttga
30721  ttaaaagccc  aaaaaccaat  caaacccttc  cccaattact  cataagaata  aatcattgga
30781  actaatcatt  caataaagat  cacttacttg  aaatctgaaa  gtatgtctct  ggtgtagttg
30841  ttcagcagca  cctcggaacc  ctcctcccag  ctctggtact  ccagtccccg  gcgggcggcg
30901  aacttcctcc  acaccttgaa  agggatgtca  aattcctggt  ccacaatttt  cattgtcttc
30961  cctcagatga  caaagaggct  ccgggtggaa  gatgacttca  accccgtcta  cccctatggc
31021  tacgcgcgga  atcagaatat  ccccttcctt  actcccccct  ttgtttcttc  cgatggattc
31081  caaaacttcc  cacctggggt  cctgtcactc  aaactggctg  acccaatcgc  catcactaat
31141  ggggatgttt  cactcaaggt  gggaggggggg  cttactgttg  aaaaagatag  tggaaatcta
31201  aaggtgaacc  ctaaggctcc  cttgcaagtt  acaactgata  aacagttgga  aattgcactg
31261  gcttatccat  ttgaagtcag  taatggcaag  cttggcataa  aagcaggtca  tggattgaaa
31321  gtcattgaca  aaattgctgg  tttggaaggt  ttggcaggta  cgcttgtagt  tttgactgga
31381  aaaggaatag  gtactgaaaa  tcttgaaaac  agtgatgggt  caagtagagg  agttggtata
31441  aacgtaagac  ttgctaaaga  tggaggtctg  tcttttgata  aaaagggtga  tttagttgct
31501  tggaataaac  atgatgacag  acgcactcta  tggacaactc  ccgacccatc  cccaaattgt
31561  acaatcgatc  aggaaaggga  ttcaaagctc  actttagtat  aacaaaatg   tggcagtcaa
31621  attttggcta  atgtctcttt  acttgttgta  aaaggaaaat  ttagtaacat  aaacaataat
31681  actaatccaa  ctgataaaaa  aatcacagta  aagctacttt  ttaatgaaaa  gggagtatta
31741  atggacagtt  cgacacttaa  gaaagaatat  tggaactaca  gaaatgataa  ttctactgta
31801  tctcaggcct  atgataatgc  agttcctttt  atgccaaaca  taaaagctta  tcctaaacct
31861  accacagaca  cttcggctaa  accagaagat  aaaaaaagtg  ctgctaaaag  atacattgtg
31921  agcaatgtct  atattggagg  cttgccagat  aaaactgttg  ttataactat  taagtttaat
31981  gcagaaactg  aatgtgctta  ttcgattacc  tttgaattca  catgggcaaa  aacctttgaa
32041  gatgtgcagt  ttgattcctc  ctcttttacc  ttttcctata  ttgcccaaga  aaatgaggac
32101  gaagacaaat  aaaatgtttt  aaaatgaatt  catgtatctt  tattgatttt  tacaccagca
32161  cgggtagtca  gtctcccacc  accagcccat  ttcacagtgt  aaacgattct  ctcagcacgg
32221  gtggccttaa  atagggaaat  gttctgatta  gtgcgggaac  tggacttggg  gtctataatc
32281  cacacagttt  cctggcgagc  caaacggggg  tcggtgattg  agatgaagcc  gtcctctgaa
32341  aagtcatcca  agcgggcctc  acagtccaag  gtcacagtct  ggtgaaacga  gaagaacgca
32401  cagattcata  ctcggaaaac  aggatgggtc  tgtgcctctc  catcagcgcc  ctcaacagtc
32461  tctgccgccg  gggctcggtg  cggctgactc  agatgggatc  gggatcacaa  gtctctctga
32521  ctatgatccc  cacagccttc  agcatcagtc  tcctggtgcg  tcgggcacag  caccgcatcc
32581  tgatctcgct  catgttctca  cagtaagtgc  agcacataat  caccatgtta  ttcagcagcc
32641  cataattcag  ggtgctccag  ccaaaactca  tgttggggat  gatggaaccc  acgtgaccat
32701  cgtaccagat  gcggcagtat  atcagatgcc  tgccctcat   gaacacactg  cccatataca
32761  tgatctcttt  gggcatgtct  ctgttcacaa  tctgacggta  ccaggaaag   cgctggttga
32821  acatgcaccc  gtaaatgact  ctcctgaacc  acacggccag  cagggtgcct  cccgcccgac
32881  actgcaggga  gcccggggat  gaacagtggc  aatgcaggat  ccagcgctcg  tacccgctca
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FIG. 16A-9

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32941 ccatctgagc tctcaccaag tccagggtag cggggcacag gcacactgac atacatcttt
33001 ttaaaatttt tatttcctct ggagtcaaga tcatatccca ggggactgga aactcttgga
33061 gcagggtaaa gccagcagca catggtaatc cacggacaga acttacatta tgataatctg
33121 catgatcaca atcaggcaac agggggatgtt gttcagtcag tgaagccctg gtttcctcat
33181 cagatcgtgg taaacgggcc ctgcgatatg gatgatggcg gagcgagctg gattgaatct
33241 cggtttgcat tgtagtggat tctcttgcgt accttgtcgt acttctgcca gcagaaatgg
33301 gcccttgaac agcagatacc cctcctgcgg ccgtcctttc gctgctgccg ctcagtcatc
33361 caactgaagt acatccattc tcgaagattc tggagaagtt cctctgcatc tgatgaaaca
33421 aaaaacccgt ccatgcgaat tcccctcatc acatcagcca ggactctgta ggccatcccc
33481 atccagttaa tgctgccttg tctatcattc agagggggcg gtggcaggat tggaagaacc
33541 attttttattc caaacggtct cgaaggacga taaagtgcaa gtcacgcagg tgacagcgtt
33601 cccctccgct gtgctggtgg aaacagacag ccaggtcaaa acccactcta ttttcaaggt
33661 gctcgaccgt ggcttcgagc agtggctcta cgcgtacatc cagcataaga atcacattaa
33721 aggctggccc tccatcgatt tcatcaatca tcaggttaca ttcctgcacc atccccaggt
33781 aattctcatt tttccagcct tggattatct ctacaaattg ttggtgtaag tccactccgc
33841 acatgtggaa aagctcccac agtgcccct ccactttcat aatcaggcag accttcataa
33901 tagaaacaga tcctgctgct ccaccacctg cagcgtgttc aaaacaacaa gattcaataa
33961 ggttctgccc tccgccctga gctcgcgcct caatgtcagc tgcaaaaaat cacttaagtc
34021 ctgggccact acagctgaca attcagagcc agggctaagc gtgggactgg caagcgtaag
34081 ggaaaacttt aatgctccaa agctagcacc caaaaactgc atgctggaat aagctctctt
34141 tgtgtctccg gtgatgcctt ccaaaatgtg agtgataaag cgtggtagtt tttctttaat
34201 catttgcgta atagaaaagt cctgtaaata agtcactagg accccaggga ccacaatgtg
34261 gtagcttaca ccgcgtcgct gaagcatggt tagtagagat gagagtctga aaaacagaaa
34321 gcatgcacta aactaaggtg gctattttca ctgaaggaaa aatcactctc tccaacaaca
34381 gggtacccac tgggtggccc ttgcggacat acaaaaatcg gtccgtgtga ttaaaaagca
34441 gcacagtaag ttcctgtctt cttccggcaa aaatcacatc ggactgggtt agtatgtccc
34501 tggcatggta gtcattcaag gccataaatc tgccctgata tccagtagga accagcacac
34561 tcacttttag gtgaagcaat accaccccat gcggaggaat gtggaaagat tcagggcaaa
34621 aaaaattata tctattgcta gtcccttcct ggacgggagc aatccctcca ggactatcta
34681 tgaaagcata cagagattca gccatagctc agcccgctta ccagtagaca gagagcacag
34741 cagtacaagc gccaacagca gcgactgact acccactgac ccagctccct atttaaaggc
34801 gccttacact gacgtaatga ccaaaggtct aaaaacccg ccaaaaaaaa acacacacgc
34861 cctgggtgtt ttttgcgaaa acacttccgc gttctcactt cctcgtattg atttcgtgac
34921 ttaacttccg ggttcccacg ttacgtcact tctgcccctta catgtaactc agtcgtaggg
34981 cgccatcttg cccacgtcca aaatggcttc catgtccagc cacgcctccg cggcgaccgt
35041 tagccgtgcg tcgtgacgtc atttgcatca tcttctctcg tccaatcagc gctggccccg
35101 ccctaaattc aaaagctcat ttgcatgtta actttgtttt actttgtggg gtatattatt
35161 gatgatc
SEQ ID NO:   5
```

FIG. 16A-10

Grp	Vaccine at Wk 0, Wk 4	Monkey ID	Pre		Wk 4		Wk 8		Wk 12	
			Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag
1	Ad24ΔE1gagΔOrf6Ad5Orf6	00C072	3	4	4	381	3	150	3	68
	10^11 vp	00C178	3	3	1	559	1	743	0	635
		00C222	0	3	1	369	1	753	0	670
		00D011	1	9	9	211	4	273	0	520
		00D023	0	6	0	295	1	459	1	368
		00D031	15	5	10	103	1	101	1	40
2	Ad24ΔE1gagΔOrf6Ad5Orf6	99C168	4	6	0	118	5	241	3	209
	10^10 vp	99C170	10	5	5	241	3	141	3	103
		99C173	1	3	0	23	0	14	0	21
3	Ad24ΔE1gagΔE4Ad5Orf6	99C154	0	3	0	93	0	60	1	53
	10^10 vp	99C158	1	0	1	141	0	101	1	120
		99C177	0	0	0	45	0	39	0	79
4	MRKAd5-HIVgag	00C018	1	5	13	1025	0	824	3	753
	10^11 vp	00C034	0	4	5	219	5	404	0	491
		00C058	4	4	3	1086	0	440	0	439
5	MRKAd5-HIVgag	99C218	0	3	5	2500	0	1580	10	1655
	10^10 vp	99C227	6	1	4	529	5	365	5	1004
		99D185	ND	ND	0	425	0	310	0	271

FIG. 17

Vaccine at Wk 0, Wk 4	Monkey ID	Gag-Specific (Wk 12)	
		%CD4	%CD8
Ad24ΔE1gagΔOrf6Ad5Orf6 10^11 vp	00C072	0.02	0.02
	00C178	0.05	0.38
	00C222	0.02	0.40
	00D011	0.02	0.27
	00D023	0.01	0.11
	00D031	0.01	0.01
MRKAd5-HIVgag 10^11 vp	00C018	0.05	0.41
	00C034	0.06	0.18
	00C058	0.02	0.28

FIG. 18

Grp	Vaccine at Wk 0, Wk 4	Monkey ID	Wk 4	WK 8
1	Ad24ΔE1gagΔOrf6Ad5Orf6 10^11 vp	00C072	<10	77
		00C178	<10	26
		00C222	<10	423
		00D011	<10	98
		00D023	<10	<10
		00D031	<10	<10
2	Ad24ΔE1gagΔOrf6Ad5Orf6 10^10 vp	99C168	<10	<10
		99C170	<10	<10
		99C173	<10	<10
3	Ad24ΔE1gagΔE4Ad5Orf6 10^10 vp	99C154	<10	<10
		99C158	<10	<10
		99C177	<10	<10
4	MRKAd5-HIVgag 10^11 vp	00C018	34	1017
		00C034	14	423
		00C058	46	934
5	MRKAd5-HIVgag 10^10 vp	99C218	20	99
		99C227	40	767
		99D185	17	342

FIG. 19
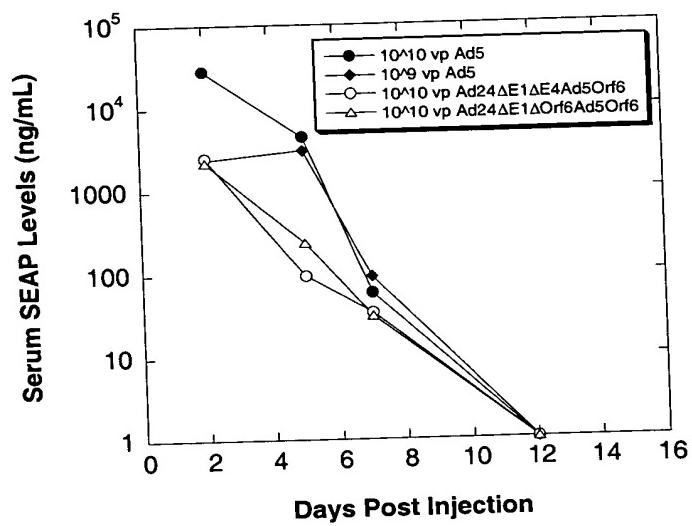
FIG. 20
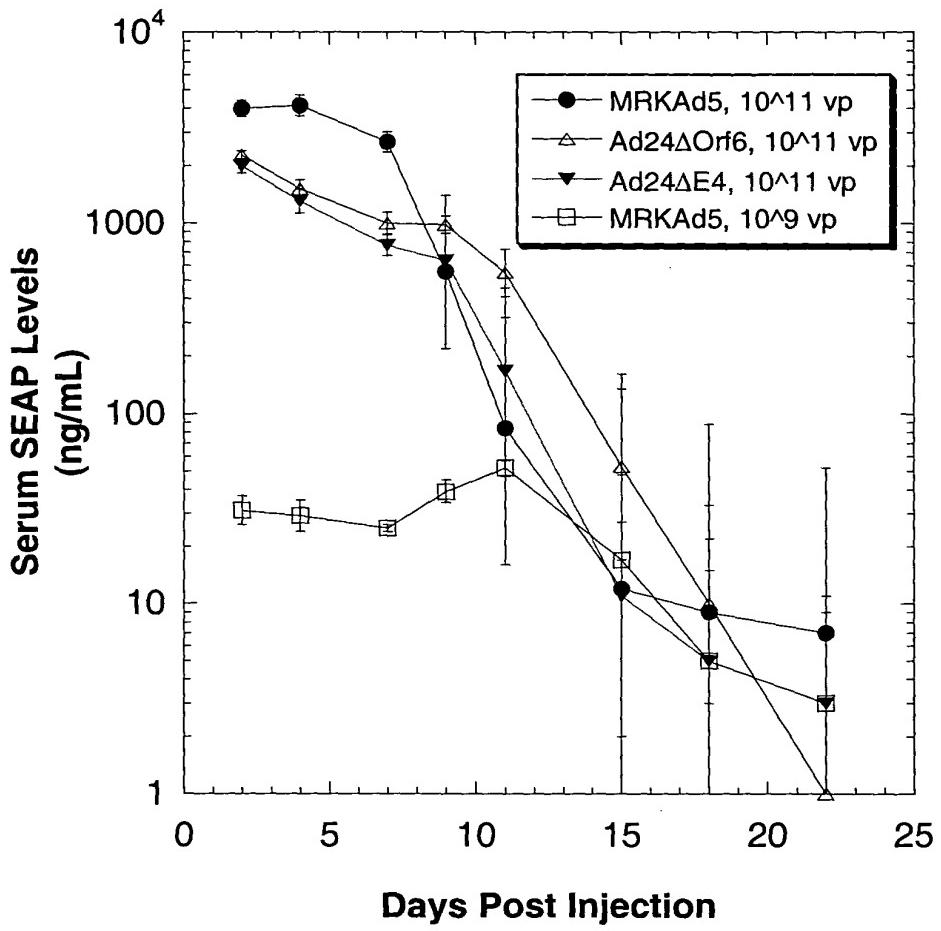
FIG. 21
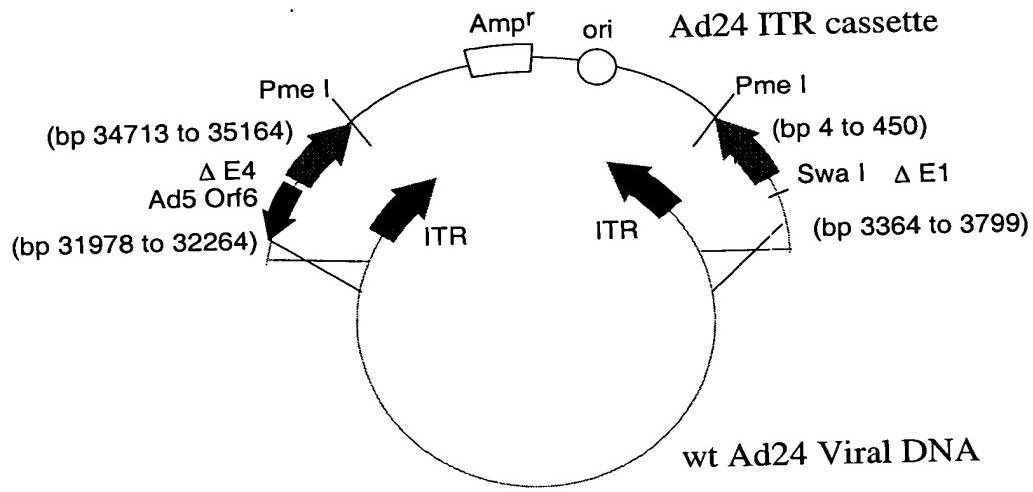
FIG. 22

Animal	Prime (Wk 0, 4, 26)	Boost (Wk 56)	Pre		Prime[b]		Pre-Boost[c]		Post-Boost[d]	
			Mock[a]	Gag[a]	Mock	Gag	Mock	Gag	Mock	Gag
Monkey 1	10^9 vp MRKAd5-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	18	16	1	244	3	74	3	1235
Monkey 2	10^7 vp MRKAd5-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	10	9	4	83	0	18	0	856
Monkey 3	10^9 vp MRKAd6-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	1	1	0	219	9	69	0	703
Monkey 4	10^7 vp MRKAd6-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	1	1	3	59	1	20	0	419
Monkey 5	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	3	4	ND[e]	ND	ND	ND	4	558
Monkey 6	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0	3	ND	ND	ND	ND	1	295
Monkey 7	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	1	9	ND	ND	ND	ND	9	103
Monkey 8	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	3	3	ND	ND	ND	ND	1	381
Monkey 9	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0	6	ND	ND	ND	ND	0	369
Monkey 10	none	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	15	5	ND	ND	ND	ND	10	211

FIG. 23

Animal	Prime (Wk 0, 4, 26)	Boost (Wk 56)	Gag-Specific T cells (Wk 60)	
			%CD4	%CD8
Monkey 1	10^9 vp MRKAd5-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0.06	0.37
Monkey 2	10^7 vp MRKAd5-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0.01	0.56
Monkey 3	10^9 vp MRKAd6-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0.07	0.06
Monkey 4	10^7 vp MRKAd6-gag	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	0.04	0.20

FIG. 24

Animal	Prime (Wk 0, 4)	Boost (Wk 24)	Pre		Prime[b]		Pre-Boost[c]		Post-Boost[d]	
			Mock[a]	Gag[a]	Mock	Gag	Mock	Gag	Mock	Gag
Monkey 11	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	10^7 vp MRKAd5-gag	3	4	3	150	4	28	0	188
Monkey 12	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	10^7 vp MRKAd5-gag	0	3	1	753	4	554	0	1029
Monkey 13	10^{11} vp Ad24ΔE1gagΔOrf6Ad5Orf6	10^7 vp MRKAd5-gag	1	9	4	273	0	370	0	1520
Monkey 14	none	10^7 vp MRKAd5-gag	0	0	ND[e]	ND	ND	ND	4	94
Monkey 15	none	10^7 vp MRKAd5-gag	0	0	ND	ND	ND	ND	1	168
Monkey 16	none	10^7 vp MRKAd5-gag	8	3	ND	ND	ND	ND	8	149

FIG. 25

Ad35 ITR cassette

Amp^r ori

Pme I
(bp 34419 to 34793)

Δ E4
Ad5 Orf6
(bp 31599 to 31913)

ITR

ITR

Pme I
(bp 4 to 456)

Swa I Δ E1
(bp 3403 to 3886)

wt Ad34 Viral DNA
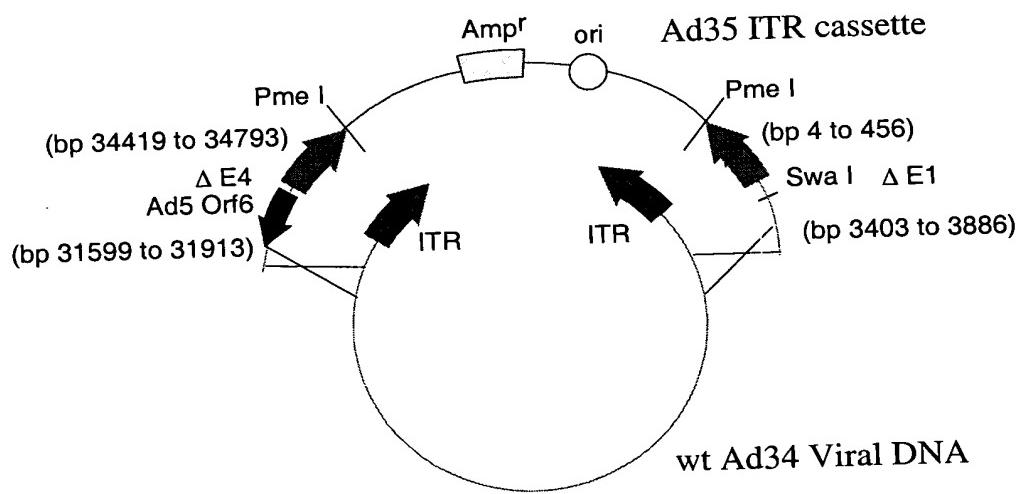
FIG. 26
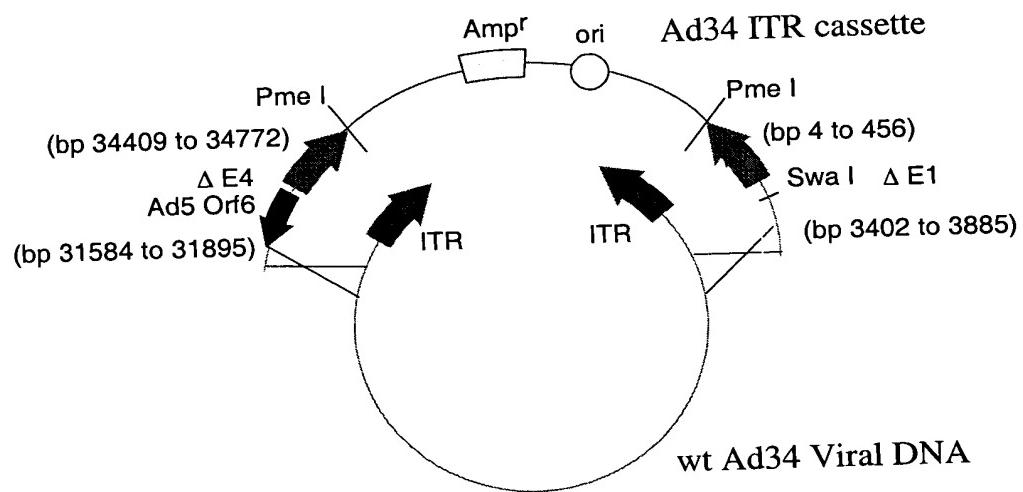
FIG. 27

```
   1 catcatcaat aatatacctt atagatggaa tggtgccaat atgtaaatga ggtgatttta
  61 aaaattgtgg ggtgtgtggt gattggctgt ggggttaacg gctaaacggg gcggcgcggc
 121 cgtgggaaaa tgacgttttg tggggtgtgga gtttttttgc aagttgtcgc gggaaatgtg
 181 acgcataaaa aggctttttt tctcacggaa ctactgactt ttcccacggt atttaacagg
 241 aaatgaggta gttttgaccg gatgcaagtg aaaattgctg atttgcgcgc gaaaactgaa
 301 tgaggaagtg tttttctgaa taatgtggta tttatggcag ggtggagtat ttgttcaggg
 361 ccaggtagac tttgacccat tacgtggagg tttcgattac cgtgttttt acctgaattt
 421 ccgcgtaccg tgtcaaagtc ttctgttttt acgtaggtgt cagctgatcg ctacggtatt
 481 tatacctcag ggtttgtgtc aagaggccac tcttgagtgc cagcgagaag agttttctcc
 541 tctgcgccgg cagtttaata ataaaaaaat gagagatttg cgatttctgc ctcaggaaat
 601 aatttctgct gagactggaa atgaaatact ggagcttgtg gtgcacgccc tgatgggaga
 661 cgatccggag ccacctgtgc agcttttga gcctcctacg cttcaggaac tgtatgattt
 721 agaggtagag ggatcggagg attctaatga ggaagctgtg aatggctttt ttaccgattc
 781 tatgctttta gctgctaatg aaggattaga attagatccg cctttggaca ctttcgatac
 841 tccagggggtg attgtggaaa gcggtacagg tgtaagaaaa ttacctgatt tgggttccgt
 901 ggactgtgat ttgcactgct atgaagacgg gtttcctccg agtgatgagg aggaccatga
 961 aaaggagcag tctatgcaga ctgcagcggg tgagggagtg aaggctgcca gtgttggttt
1021 tcagttggat tgcccggagc ttcctggaca tggctgtaag tcttgtgaat ttcacaggaa
1081 aaatactgga gtaaaggaac tgttatgttc gctttgttat atgagagcgc actgccactt
1141 tatttacagt aagtgtgttt aagttaaaat ttaaaggaat atgctgtttt tcacatgtat
1201 attgagtggg agttttgtgc ttcttattat aggtcctgtg tctgatgctg atgagtcacc
1261 atctcctgat tctactacct cacctcctga gattcaagca cctgttcctg tggacgtgcg
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1441 agtgttccat atccgtgttt acttaaggtg acgtcaatat ttgtgtgaga gtgcaatgta
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1561 taagtagaag cagacctgta tggttagctc ataggagctg gctttcatcc atggaggttt
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1681 tctccggttt ttggagattc tggttcgcta gtgaattagc tagggtagtt tttaggataa
1741 aacaggacta taaagaagaa tttgaaaagt tgttggtaga ttgcccagga cttttgaag
1801 ctcttaattt gggccatcaa gttcacttta aagaaaaagt tttatcagtt ttagactttt
1861 caaccccagg tagaactgcc gctgctgtgg cttttcttac ttttatatta gataaatgga
1921 tcccgcagac tcatttcagc aggggatacg ttttggattt cgtagccaca gcattgtgga
1981 gaacatggaa ggttcgcaag atgaggacaa tcttaggtta ctggccagtg cagcctttgg
2041 gtgtagcggg aatcctgagg catccaccgg tcatgccagc ggttctggag aggaacagc
2101 aagaggacaa cccgagcagc ggcctggacc ctccagtgga ggaggcggag tagctgactt
2161 gtctcctgaa ctgcaacggg tgcttactgg atctacgtcc actgacgggg ataggggcgt
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3661 cagctgcagc cgccgccgcc gcctctgttg ccgctaacac tgtgcttgga atgggttact
3721 atggaagtat cgtggctaat tccacttcct ctaataaccc ttctaccctg actcaggaca
3781 agttacttgt ccttttggcc cagctggagg ctttgaccca acgtctgggt gaactttatc
3841 agcaggtggc cgagttgcga gtacaaactg agtctgctgt cggcacggca aagtctaaat
```

```
3901 aaaaaaaaat tccacaatca atgaataaat aaacgagctt gttgttgatt taaaatcaag
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4621 gttccttcgg gccccggagc atagttcccc tcacagattt gcatttccca agctttcagt
4681 tccgatggtg gaatcatgtc cacctggggg gctatgaaga acaccgtttc tggggcgggg
4741 gtgattagtt gggatgatag caagtttctg agcaattgag atttgccaca tccggtgggg
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5521 ccggttcatt ggggtcaaaa acaagttttc cgccatattt tttgatgcgt ttcttacctt
5581 tggtctccat gagttcgtgt cctcgttgag tgacaaacag gctgtccgta tccccgtaga
5641 ctgatttttac aggcctcttc tccagtggag tgcctcggtc ttcttcgtac aggaactctg
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5761 agcgatcgtt gtcaaccagg gggtccacct tttccaaagt atgcaaacac atgtcaccct
5821 cttcaacatc caggaatgtg attggcttgt aggtgtattt cacgtgacct ggggtccccg
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6301 ctcgattatg caaggtaatt aaatccacac tggtggccac ctcgcctcga aggggttcgt
6361 tggtccaaca gagcctacct cctttcctag aacagaaagg gggaagtggg tctagcataa
6421 gttcatcggg agggtctgca tccatggtaa agattcccgg aagtaaatcc ttatcaaaat
6481 agctgatggg agtggggtca tctaaggcca tttgccattc tcgagctgcc agtgcacgct
6541 catatgggtt aaggggactg ccccagggca tgggatgggt gagtgcagag gcatacatgc
6601 cacagatgtc atagacgtag atgggatcct caaagatgcc tatataggtt ggatagcatc
6661 gccccctct gatacttgct cgcacatagt catatagttc atgtgatggc gctagcaacc
6721 ccggacccaa gttggtgcga ttgggttttt ctgttctgta gacaatctgg cgaaagatgg
6781 cgtgagaatt ggaagagatg gtgggtcttt gaaaaatgtt gaaatgggca tgaggtagac
6841 ctacagagtc tctgacaaag tgggcataag attcttgaag cttggttacc agttcggcgg
6901 tgacaagtac gtctagggcg cagtagtcaa gtgtttcttg aatgatgtca taacctggtt
6961 ggtttttctt ttcccacagt tcgcggttga gaaggtattc ttcgcgatcc ttccagtact
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7081 ctgccttgta agggcagcag cccttctcta cgggtagaga gtatgcttga gcagcttttc
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7381 cagctaggac gatctcgtcg aaaccgttga tgttgtgtcc tacgatgtat aattctatga
7441 aacgcggcgt gcctttgacg tgaggtagct tattgagctc atcaaaggtt aggtctgtag
7501 ggtcagataa ggcgtagtgt tcgagagccc attcgtgcag gtgaggattt gcatgtagga
7561 atgatgacca aagatccacc gccagtgctg tttgtaactg gtcccgatac tgacgaaaat
7621 gctggccaat tgccatttttt tctggagtga cacagtagaa ggttctgggg tcttgttgcc
7681 atcgatccca cttttagttta atggctagat cgtgggccat gttgacgaga cgctcttctc
7741 ctgagagttt catgaccagc atgaaaggaa ctagttgttt gccaaaggac cccatccagg
```

FIG. 28A-2

```
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7921  agtttctgcg  gcgcgccgag  cattcgtgtt  tgtgcttgta  cagacggccg  cagtagtcgc
7981  agcgttgcac  gggttgtatc  tcgtgaatga  gctgtacctg  gcttcccttg  acgagaaatt
8041  tcagtgggaa  gccgaggcct  ggcgattgta  tctcgtgctc  ttctatattc  gctgtatcgg
8101  cctgttcatc  ttctgtttcg  gtggtggtca  tgctgacgag  cccccgcggg  aggcaagtcc
8161  agacctcggc  gcgggagggg  cggagctgaa  ggaccagagc  gcgcaggctg  gagctgtcca
8221  gagtcctgag  acgctgcgga  ctcaggttag  taggtaggga  cagaagatta  acttgcatga
8281  tcttttccag  ggcgtgcggg  aggttcagat  ggtacttgat  ttccacaggt  tcgtttgtag
8341  agatgtcaat  ggcttgcagg  gttccgtgtc  ctttgggcgc  cactaccgta  cctttgtttt
8401  ttcttttgat  cggtggtggc  tctcttgctt  cttgcatgct  cagaagcgat  gacggggacg
8461  cgcgccgggc  ggaagcggtt  gttccggacc  cggaggcatg  gctggtagtg  gcacgtcggc
8521  gccgcgcacg  ggcaggttct  ggtactgcgc  tctgagaaga  cttgcgtgcg  ccaccacgcg
8581  tcgattgacg  tcttgtatct  gacgtctctg  ggtgaaagct  accggccccg  tgagcttgaa
8641  cctgaaagag  agttcaacag  aatcaatttc  ggtatcgtta  acggcagctt  gtctcagtat
8701  ttcttgtacg  tcaccagagt  tgtcctggta  ggcgatctcc  gccatgaact  gctcgatttc
8761  ttcctcctga  agatctccgc  gacccgctct  ctcgacggtg  gccgcgaggt  cattggagat
8821  acggcccatg  agttgggaga  atgcagtcat  gcccgcctcg  ttccagacgc  ggctgtaaac
8881  cacggccccc  tcggagtctc  ttgcgcgcat  caccacctga  gcgaggttaa  gctccacgtg
8941  tctggtgaag  accgcatagt  tgcataggcg  ctgaaaaagg  tagttgagtg  tggtggcaat
9001  gtgttcggcg  acgaagaaat  acatgatcca  tcgtctcagc  ggcatttcgc  tgacatcgcc
9061  cagagcttcc  aagcgctcca  tggcctcgta  gaagtccacg  gcaaaattaa  aaaactgggga
9121  gtttcgcgcg  gacacggtca  attcctcctc  gagaagacgg  atgagttcgg  ctatggtggc
9181  ccgtacttcg  cgttcgaagg  ctcccgggat  ctcttcttcc  tcttctatct  cttcttccac
9241  taacatctct  tcttcgtctt  caggcgggggg  cggaggggggc  acacggcgac  gtcgacggcg
9301  cacgggcaaa  cggtcgatga  atcgttcaat  gacctctccg  cggcggcggc  gcatggtttc
9361  agtgacggcg  cggccgttct  cgcgcggtcg  cagagtaaaa  acaccgccgc  gcatctcctt
9421  aaagtggtga  ctgggaggtt  ctccgtttgg  gagggagagg  gcgctgatta  tacattttat
9481  taattgcccc  gtagggactg  cgcgcagaga  tctgatcgtg  tcaagatcca  cgggatctga
9541  aaacctttcg  acgaaagcgt  ctaaccagtc  acagtcacaa  ggtaggctga  gtacggcttc
9601  ttgtgggcgg  gggtggttat  gtgttcggtc  tgggtcttct  gtttcttctt  catctcggga
9661  aggtgagacg  atgctgctgg  tgatgaaatt  aaagtaggca  gttctaagac  ggcggatggt
9721  ggcgaggagc  accaggtctt  tgggtccggc  ttgctggata  cgcaggcgat  tggccattcc
9781  ccaagcatta  tcctgacatc  tagcaagatc  tttgtagtag  tcttgcatga  gccgttctac
9841  gggcacttct  tcctcacccg  ttctgccatg  catacgtgtg  agtccaaacc  cgcgcattgg
9901  ttgtaccagt  gccaagtcag  ctacgactct  ttcggcgagg  atggcttgct  gtacttgggt
9961  gagggtggct  tgaaagtcat  caaaatccac  aaagcggtgg  taagccccgg  tattaatggt
10021 gtaagcacag  ttggccatga  ctgaccagtt  aactgtctgg  tgaccagggc  gcacgagctc
10081 ggtgtattta  aggcgcgaat  aggcgcgggt  gtcaaagatg  taatcgttgc  aggtgcgcac
10141 cagatactgg  taacctataa  gaaaatgcgg  cggtggttgg  cggtagagag  gccatcgttc
10201 tgtagctgga  gcgccggggg  cgaggtcttc  caacataagg  cggtgatagc  cgtagatgta
10261 cctggacatc  caggtgattc  ctgcggcggt  agtagaagcc  cgaggaaact  cgcgtacgcg
10321 gttccaaatg  ttgcgtagcg  gcatgaagta  gttcattgta  ggcacggttt  gaccagtgag
10381 gcgcgcgcag  tcattgatgc  tctatagaca  cggagaaaat  gaaagcgttc  agcgactcga
10441 ctccgtagcc  tggaggaacg  tgaacgggtt  gggtcgcggt  gtaccccggt  tcgagacttg
10501 tactcgagcc  ggccggagcc  gcggctaacg  tggtattggc  actcccgtct  cgacccagcc
10561 tacaaaaatc  caggatacgg  aatcgagtcg  ttttgctggt  tgccgaatgg  cagggaagtg
10621 agtcctattt  ttttttttg  ccgctcagat  gcatcccgtg  ctgcgacaga  tgcgtcccca
10681 acaacagccc  ccctcgcagc  agcagcaacc  acaaaaggct  gtccctgcaa  ctactgcaac
10741 tgccgctgtg  agcggtgcgg  gacagcccgc  ctatgatctg  gacttggaag  agggcgaagg
10801 actggcacgt  ctaggtgcgc  cttcgcccga  gcggcatccg  cgagttcaac  tgaaaaaaga
10861 ttctcgcgag  gcgtatgtgc  cccaacagaa  cctatttaga  gacagaagcg  gcgaggagcc
10921 ggaggagatg  cgagcttccc  gctttaacgc  gggtcgtgag  ctgcgtcacg  gtttggacag
10981 aagacgagtg  ttgcgggacg  aggatttcga  agttgatgaa  gtgacaggga  tcagtcctgc
11041 cagggcacac  gtggctgcag  ccaaccttgt  atcggcttac  gaacagacag  taaaggaaga
11101 gcgtaatttc  caaaagtctt  ttaataatca  tgtgcgaacc  ctcattgccc  gcgaagaagt
11161 caccccttggt  ttgatgcatt  tgtgggattc  gatggaagct  atcattcaga  accctactag
11221 caaacctctg  accgcacagc  tgtttctggt  ggtgcaacac  agcagagaca  atgaggcttt
11281 cagagaggcg  ctgctcaaca  tcaccgaacc  cgaggggaga  tggttgtatg  atcttatcaa
11341 cattctacag  agtatcatag  tgcaggagcg  gagcctgggc  ctggccgaga  aggttggctgc
11401 catcaattac  tcggttttga  gcttgggaaa  gtattacgct  cgcaagatct  acaagactcc
11461 atacgttccc  atagacaagg  aggtgaagat  agatgggttc  tacatgcgca  tgacgctgaa
11521 ggtgttgacc  ctgagcgatg  atcttggggt  gtaccgcaat  gacagaatgc  atcgcgcggt
11581 gagcgccagc  aggaggcgcg  agttaagcga  cagggaactg  atgcacagtt  tgcaaagagc
11641 tctaactgga  gctggaaccg  agggtgagaa  ttactttgat  atgggagctg  acttgcagtg
```

FIG. 28A-3

```
11701  gcagcctagt  cgcagggctc  tgaacgccgc  gacggcagga  tgtgagcttc  cttacataga
11761  agaggcggat  gaaggcgagg  aggaagaggg  cgagtacttg  gaagactgat  ggcacaaccc
11821  gtgttttttg  ctagatggaa  cagcaagcac  cggatcccgc  aatgcgggcg  gcgctgcaga
11881  gccagccgtc  cggcattaac  tcctcggacg  attggacccca  ggccatgcaa  cgtatcatgg
11941  cgttgacgac  tcgcaacccc  gaagccttta  gacagcaacc  ccaggccaac  cgtctatcgg
12001  ccatcatgga  agctgtagtg  ccttcccgct  ctaatcccac  tcatgagaag  gtcctggcca
12061  tcgtgaacgc  gttggtggag  aacaaagcta  ttcgtccaga  tgaggccgga  ctggtataca
12121  acgctctctt  agaacgcgtg  gctcgctaca  acagtagcaa  tgtgcaaacc  aatttggacc
12181  gtatgataac  agatgtacgc  gaagccgtgt  ctcagcgcga  aaggttccag  cgcgatgcca
12241  acctgggttc  gctggtggcg  ttaaatgctt  tcttgagtac  tcagcctgct  aatgtgccgc
12301  gtggtcaaca  ggattatact  aacttttaa  gtgctttgag  actgatggta  tcagaagtac
12361  ctcagagcga  agtatatcag  tccggtcctg  attacttctt  tcagactagc  agacagggct
12421  tgcagacggt  aaatctgagc  caagctttta  aaaaccttaa  aggtttgtgg  ggagtgcatg
12481  ccccggtagg  agaaagagca  accgtgtcta  gcttgttaac  tccgaactcc  cgcctattat
12541  tactgttggt  agctcctttc  accgacagcg  gtagcatcga  ccgtaattcc  tatttgggtt
12601  acctactaaa  cctgtatcgc  gaagccatag  ggcaaagtca  ggtggacgag  cagacctatc
12661  aagaaattac  ccaagtcagt  cgcgctttgg  gacaggaaga  cactggcagt  ttggaagcca
12721  ctctgaactt  cttgcttacc  aatcggtctc  aaaagatccc  tcctcaatat  gctcttactg
12781  cggaggagga  gaggatcctt  agatatgtgc  agcagagcgt  gggattgttt  ctgatgcaag
12841  aggggcaac  tccgactgca  gcactggaca  tgacagcgcg  aaatatggag  cccagcatgt
12901  atgccagtaa  ccgacctttc  attaacaaac  tgctggacta  cttgcacaga  gctgccgcta
12961  tgaactctga  ttatttcacc  aatgccatct  taaacccgca  ctggctgccc.  ccacctggtt
13021  tctacacggg  cgaatatgac  atgcccgacc  ctaatgacgg  atttctgtgg  gacgacgtgg
13081  acagcgatgt  tttttcacct  ctttctgatc  atcgcacgtg  gaaaaaggaa  ggcggcgata
13141  gaatgcattc  ttctgcatcg  ctgtccgggg  tcattggtgc  taccgcggct  gagcccgagt
13201  ctgcaagtcc  ttttcctagt  ctaccctttt  ctctacacag  tgtacgtagc  agcgaagtgg
13261  gtagaataag  tcgcccgagt  ttaatgggcg  aagaggagta  cctaaacgat  tccttgctca
13321  gaccggcaag  agaaaaaaat  ttcccaaaca  atggaataga  aagtttggtg  gataaaatga
13381  gtagatggaa  gacttatgct  caggatcaca  gagacgagcc  tgggatcatg  gggactacaa
13441  gtagagcgag  ccgtagacgc  cagcgccatg  acagacagag  gggtcttgtg  tgggacgatg
13501  aggattcggc  cgatgatagc  agcgtattgg  acttgggtgg  gagaggaagg  ggcaacccgt
13561  ttgctcattt  gcgccctcgc  ttgggtggta  tgttgtaaaa  aaaaataaaa  aagaaaaaac
13621  tcaccaaggc  catggcgacg  agcgtacgtt  cgttcttctt  tattatctgt  gtctagtata
13681  atgaggcgag  tcgtgctagg  cggagcggtg  gtgtatccgg  agggtcctcc  tccttcgtac
13741  gagagcgtga  tgcagcagca  gcaggcgacg  gcggtgatgc  aatccccact  ggaggctccc
13801  tttgtgcctc  cgcgatacct  ggcacctacg  gagggcagaa  acagcattcg  ttactcggaa
13861  ctggcacctc  agtacgatac  caccaggttg  tatctggtgg  acaacaagtc  ggcggacatt
13921  gcttctctga  actatcagaa  tgaccacagc  aacttcttga  ccacggtggt  gcaaaacaat
13981  gactttaccc  ctacggaagc  cagcacccag  accattaact  ttgatgaacg  atcgcggtgg
14041  ggcggtcagc  taaaaaccat  catgcatact  aacatgccca  acgtgaacga  gtatatgttt
14101  agtaacaagt  tcaaagcgcg  tgtgatggtg  tccagaaaac  ctcctgaggg  tgttagagta
14161  gacgataatt  atgatcataa  gcaagatatt  ctaaaatacg  agtggttcga  gtttactttg
14221  ccagaaggca  actttttcggt  cactatgact  atcgacttga  tgaacaatgc  catcatagac
14281  aattacttga  aagtgggcag  acagaatgga  gtgttggaaa  gtgacattgg  tgttaagttc
14341  gacactagga  acttcaagtt  gggatgggat  ccagaaacta  agttgatcat  gcctggggtt
14401  tacacctatg  aggccttcca  tcctgacatc  gtattgctgc  ctggctgcgg  agtggacttt
14461  accgaaagcc  gtctgagcaa  ccttcttggc  attagaaaga  aacacccatt  ccaagagggt
14521  tttaagatct  tgtatgagga  tttagaagga  ggaaatattc  cagccctttt  ggatgtagat
14581  gcttatgaga  acagcaagaa  agatcaaaaa  gccaaaatag  aagctgctgc  agaagctaaa
14641  gcaaacatag  ttgccaacga  tccggtaagg  gtggctaacg  ctagtgaaat  caggggagac
14701  agttttgccg  caacatccgt  tccgactaaa  gaatcattat  tggatgatgt  gtctcaaaac
14761  atagagttaa  aactcactat  taagcctgtg  gaaaaagatg  gcaaaaacag  aagttacaat
14821  gtgttggaag  ataaaatcaa  cacggcctat  cgcagttggt  acctttcgta  caattatggc
14881  gacccccgaaa  aaggagtgcg  ttcctggaca  ttgctcacca  cctcagatgt  cacctgcgga
14941  gcggagcagg  tctactggtc  gcttccagac  atgatgcagg  atcctgtcac  tttccgctcc
15001  actagacaag  tcagtaacta  ccctgtggtg  ggtgcagagc  ttatgcccgt  cttttcaaag
15061  agcttctaca  acgaacaagc  tgtgtactcc  cagcagctcc  gccagtccac  ctcgcttacg
15121  cacgtcttca  accgctttcc  tgagaaccag  attttaatcc  gtccgccggc  gcccacaatt
15181  accaccgtca  gtgaaaacgt  tcctgctctc  acagatcacg  ggaccctgcc  gttgcgcagc
15241  agtatccggg  gagtccaacg  tgtgaccgtt  actgacgcca  gacgccgcac  ctgtccctac
15301  gtgtacaagg  cactgggcat  agtcgcaccg  cgcgtccttt  caagccgcac  tttctaaaaa
15361  aaaaaaaaaa  atgtccgttc  ttatctcgcc  cagtaataac  accggttggg  gtctgcgcgc
15421  tcccagcaag  atgtacggag  gcgcacgcaa  acgttctacc  caacatcccg  tgcgtgttcg
15481  cgggcatttt  cgcgctccat  ggggtgccct  caagggccgc  actcgcgttc  gaaccaccgt
15541  cgatgatgta  atcgatcagg  tggttgccga  cgcccgtaat  tatactccta  ctgcgcctac
```

<div align="center">

FIG. 28A-4

</div>

```
15601  atctactgtg  gacgcagtta  ttgacagtgt  agtggctgac  gctcgcaact  atgctcgacg
15661  taagagccgg  cgaaggcgca  ttgccagacg  tcaccgagct  accactgcca  tgcgagcagc
15721  aagagctctg  ctacgaagag  ctagacgcgt  ggggcgaaga  gccatgctta  gggcggccag
15781  acgtgcagct  tcgggcgcca  gcgccggcag  gtcccgcagg  caagcagccg  ctgtcgcagc
15841  ggcgactatt  gccgacatgg  cccaatcgcg  aagaggcaat  gtatactggg  tgcgtgacgc
15901  tgccaccggt  caacgtgtac  ccgtgcgcac  ccgtcccct  cgcacttaga  agatactgag
15961  cagtctccga  tgttgtgtcc  cagcggcgag  gatgtccaag  cgcaaataca  aggaagaaat
16021  gctgcaggtt  atcgcacctg  aagtctacgg  ccaaccgttg  aaggatgaaa  aaaaacccg
16081  caaaatcaag  cgggtaaaaa  aggacaaaaa  agaagaggaa  gatggcgatg  atgggctggc
16141  ggagtttgtg  cgcgagtttg  ccccacggcg  acgcgtgcaa  tggcgtgggc  gcaaagttcg
16201  acatgtgttg  agacctggaa  cttcggtggt  cttttacaccc  ggcgagcgtt  caagcgctac
16261  ttttaagcgt  tcctatgatg  aggtgtacgg  ggatgatgat  attcttgagc  aggcagctga
16321  ccgattaggc  gagtttgctt  atggcaagcg  tagtagaata  aatcccaagg  atgaaacagt
16381  gtccataccc  ttggatcatg  gaaatcccac  ccctagtctt  aaaccggtca  ctttgcagca
16441  agtgttaccc  gtaactccgc  gaacaggtgt  taaacgcgaa  ggtgaagatt  tgtatcccac
16501  tatgcaactg  atggtgccca  aacgccagaa  gttggaggac  gtttttggaga  aagtaaaagt
16561  ggatccagat  attcaacctg  aggttaaagt  gagacccatt  aagcaggtag  cgcctggtct
16621  gggagtacaa  actgtagaca  ttaaaaattcc  cactgaaagt  atggaagtgc  aaactgaacc
16681  cgcaaagcct  actgccacct  ccactgaagt  gcaaacggac  ccatggatgc  ccatgcctat
16741  tacaactgac  gccgtcggtc  ccactcgaag  atcccgacga  aagtacggtc  cagcaagtct
16801  gttgatgccc  aactatgtcg  tacacccatc  tattattcct  actcctggtt  accgaggcac
16861  tcgctactat  cgcagccgaa  acagtacttc  ccgccgtcgc  cgcaagacac  ctgcaaatcg
16921  cagtcgtcgc  cgtagacgca  caagcaaacc  gattcccggc  gccctggtgc  ggcaagtgta
16981  ccgcaatggt  agtgcggaac  ctttgacact  gccgcgtgcg  cgttaccatc  ctagtatcat
17041  cacttaatca  atgttgccgc  tgcctccttg  cagatatggc  cctcacttgt  cgccttcgcg
17101  ttcccatcac  tggttaccga  ggaagaaact  cgcgccgtag  aagagggatg  ttggggcgcg
17161  gaatgcgacg  ctacaggcga  cggcgtgcta  tccgcaagca  attgcggggt  ggttttttgc
17221  cagccttaat  tccaattatc  gctgctgcga  ttggcgcaat  accaggcata  gcttccgtgg
17281  cggttcaggc  ctcgcaacga  cattgacatt  ggaaaaaaaa  aaacgtata  aataaaaat
17341  acaatggact  ctgacactcc  tggtactgtg  actatgtttt  cttagagatg  gaagacatca
17401  attttcatc  cttggctccg  cgacacggca  cgaagccgta  catgggcacc  tggagcgaca
17461  tcggcacgag  ccaactgaac  gggggcgcct  tcaattggag  cagtatctgg  agcgggctta
17521  aaaattttgg  ctcaaccata  aaaacatacg  ggaacaaagc  ttggaacagc  agtacaggac
17581  aggcgcttag  aaataaactt  aaagaccaga  acttccaaca  aaaagtagtc  gatgggatag
17641  cttccggtat  caatggagtg  gtagatttgg  ctaaccaggc  tgtgcagaaa  aagataaaca
17701  gtcgtttgga  cccgccgcca  gcaacccccag  gtgaaatgca  agtggaggaa  gaaattcctc
17761  cgccagaaaa  acgaggcgac  aagcgtccgc  gtcccgattt  ggaagagacg  ctggtgacgc
17821  gcgtagatga  accgccttct  tatgaggaag  caacgaagct  tggaatgccc  accactagac
17881  cgatagcccc  tatggccacc  ggggtgatga  aaccttctca  gttgcatcga  cccgtcacct
17941  tggatttgcc  ccctcctcct  gctgctactg  ctgtacccgc  ttctaagcct  gtcgctgccc
18001  cgaaaccagt  cgccgtagcc  aggtcacgtc  ccgggggcgc  tcctcgtcca  aatgcacact
18061  ggcaaaatac  tctgaacagc  atcgtgggtc  taggcgtgca  aagtgtaaaa  cgccgtcgct
18121  gcttttaatt  aaatatggag  tagcgcttaa  cttgcctatc  tgtgtatatg  tgtcattaca
18181  cgccgtcaca  gcatcagagg  aaaaaaggaa  gaggtcgtgc  gtcgacgctg  agttactttc
18241  aagatggcca  ccccatcgat  gctgccccaa  tgggcataca  tgcacatcgc  cggacaggat
18301  gcttcggagt  acctgagtcc  gggtctggtg  cagttcgccc  gcgccacaga  cacctacttc
18361  aatctgggaa  ataagtttag  aaatcctacc  gtagcgccga  cccacgatgt  gaccaccgat
18421  cgtagccagc  ggctcatgtt  gcgcttcgtg  cccgttgacc  gggaggacaa  tacatactct
18481  tacaaagtgc  ggtacaccct  ggccgtgggc  gacaacagag  tgctggatat  ggccagcacg
18541  ttctttgaca  ttaggggcgt  gttggacaga  ggtcccagtt  ttaaacccta  ttctggtacg
18601  gcttacaact  ccctggctcc  taaaggcgct  ccaaatgcat  ctcagtggtt  ggataaggga
18661  gttacaagca  ctggcctagt  ggacgacggc  aatactgatg  atggggaaga  agccaaaaaa
18721  gcaacatca  cttttggtaa  tgctccagta  aaagccgagg  ctgaaatcac  aaaagacgga
18781  ttgccggtgg  gcttggaagt  ttcaactgaa  ggtcctaaac  caatctatgc  tgataagctt
18841  tatcagccag  aacctcaagt  gggagacgaa  acttggactg  acctagacgg  aaaaaccgaa
18901  gagtatggag  ggagggttct  taaacctgaa  actaaaatga  aaccctgcta  cggatctttt
18961  gctaaaccta  ctaatattaa  aggaggtcag  gcaaaggtaa  aaccaaaaga  agacgatggc
19021  actaacaaca  tcgagtatga  cattgacatg  aacttctttg  acttaagatc  acaaagatca
19081  gaactcaaac  ctaaaattgt  aatgtatgca  gaaaatgtgg  acctggaatg  tccagatact
19141  catgttgtgt  acaaacctgg  agtttcagat  gctagttctg  agaccaatct  tggacaacag
19201  tctatgccca  acagacccaa  ctacattggc  ttcagagata  acttcatcgg  acttatgtac
19261  tataacagta  ctggcaacat  gggggtactg  gctggccaag  cgtctcagtt  gaatgcagtg
19321  gttgacttgc  aggacagaaa  cacagaactg  tcttaccaac  tcttgcttga  ctctctgggc
19381  gacagaacca  gatactttag  catgtggaat  caggctgtgg  acagttatga  tcctgatgta
19441  cgtgttattg  aaaatcatgg  tgtggaagat  gaacttccca  actattgttt  tccgttggat
```

FIG. 28A-5

```
19501 ggtgtcggtc cgcgaacaga tagttacaag gagattaagc caaatggaga ccaatctact
19561 tggacaaatg tagacccaac tggcagcagt gaacttgcta agggaaatcc atttgccatg
19621 gaaattaacc ttcaagccaa tctatggcga agtttccttt attccaatgt ggctctatat
19681 ctcccagact cgtacaaata caccccgtcc aatgtcactc ttccagaaaa caaaaacacc
19741 tacgactaca tgaacgggcg ggtggtgccg ccatctctag tagacaccta tgtgaacatt
19801 ggtgccaggt ggtctctgga tgccatggac aatgtcaacc cattcaacca ccaccgtaac
19861 gctggcttgc gttaccgatc catgcttctg ggtaacggac gttatgtgcc tttccacata
19921 caagtgcctc aaaaattctt cgctgttaaa aacctgctgc ttctcccagg ctcctacact
19981 tatgagtgga actttaggaa ggatgtaaac atggttctac agagttccct cggtaacgac
20041 ctacgggtag atggcgccag catcagtttt acgagcatca acctctatgc tactttttc
20101 cccatggctc acaacaccgc ttccaccctt gaagccatgc tgcggaatga caccaatgat
20161 cagtcattca acgactacct atctgcagct aacatgctct accccattcc tgccaatgca
20221 accaatattc ccatttccat tccttctcgc aactgggcgg ctttcagagg ctggtcattt
20281 accagactga aaaccaaaga aactccctct ttggggtctg gatttgaccc ctacttcgtc
20341 tattctggtt ctattcccta cctggatggt accttctacc tgaaccacac ttttaagaag
20401 gtttccatca tgtttgactc ttcagtgagc tggcctggaa atgacaggtt actatctcct
20461 aacgaatttg aaataaagcg cactgtggat ggcgaaggct acaacgtagc ccaatgcaac
20521 atgaccaaag actggttctt ggtacagatg ctcgccaact acaacatcgg ctatcagggc
20581 ttctacattc cagaaggata caaagatcgc atgtattcat ttttcagaaa cttccagccc
20641 atgagcaggc aggtggttga tgaggtcaat tacaaagact tcaaggccgt cgccataccc
20701 taccaacaca acaactctgg ctttgtgggt tacatggctc cgaccatgcg tcaaggtcaa
20761 ccctatcccg ctaactatcc ctatccactc attggaacaa ctgccgtaaa tagtgttacg
20821 cagaaaaagt tcttgtgtga cagaaccatg tggcgcatac cgttctcaag caacttcatg
20881 tctatgggag cccttacaga cttgggacag aacatgctct atgccaactc agctcatgct
20941 ctggacatga cctttgaggt ggatcccatg gatgagccca ccctgctta tcttctcttc
21001 gaagttttcg acgtggtcag agtgcatcag ccacaccgcg gcatcatcga ggcagtctac
21061 ctgcgtacac cgttctcggc cggtaacgct accacgtaag aagcttcttg cttcttgcaa
21121 acagcagctg caaccatggc ctgcggatcc caaaacggct ccagcgagca agagctcaga
21181 gccattgtcc aagacctggg ttgcggacca tattttttgg gaacctttga taagcgcttc
21241 ccggggttca tggcccccga taagctcgcc tgtgccattg taaatacggc cggacgtgag
21301 acggggggag agcactggtt ggctttcggt tggaacccac gttctaacac ctgctacctt
21361 tttgatcctt ttggattctc ggatgatcgt ctcaaacaga tttaccagtt tgaatatgag
21421 ggtctcctgc gccgcagcgc tcttgctacc aaggaccggt gtattacgct ggaaaaatct
21481 acccagaccg tgcagggccc ccgttctgcc gcctgcggac ttttctgctg catgttcctt
21541 catgcctttg tgcactggcc tgaccgtccc atggacggaa accccaccat gaaattgcta
21601 actggagtgc caaacaacat gcttcattct cctaaagtcc agccccacct gtgtgacaat
21661 caaaaagcac tctaccattt tctcaatacc cattcgcctt attttcgctc tcatcgtaca
21721 cacatcgaaa gggccactgc gttcgaccgt atggatgtgc aataatgatt catgtaaaca
21781 acgtgttcaa taaacagcac tttattttt acatgtatcg aggctctgga ttacttattt
21841 atttacaagt cgaatgggtt ctgacgagaa tcagaatgac ccgcaggcag tgatacgttg
21901 cggaactgat acttgggttg ccacttgaat tcgggaatca ccaacttggg aaccggtata
21961 tcgggcagga tgtcactcca cagctttctg gtcagctgca aagctcccag caggtcagga
22021 gccgaaatct tgaaatcaca attaggacca gtgctctgag cgcgagagtt gcggtacacc
22081 ggattgcagc actgaaacac catcagcgac ggatgtctta cgcttgccag cacggtggga
22141 tctgcaatca tgcccacatc cagatcttca gcattggcaa tgctgaacgg ggtcatcttg
22201 caggtctgcc tacccatggc gggcacccaa ttaggcttgt ggttacaatc gcagtgcagg
22261 gggatcagta tcatcttggc ctgatcctgt ctgattcctg gatácacggc tctcatgaaa
22321 gcatcatatt gcttgaaagc ctgctgggct ttactaccct cggtataaaa catcccgcag
22381 gacctgctcg aaaactggtt agctgcgcag ccggcatcat tcacacagca gcgggcgtca
22441 ttgttggcta tttgcaccac acttctgccc cagcggtttt gggtgatttt ggttcgctcg
22501 ggattctcct tcaaggctcg ttgtccgttc tcgctggcca catccatctc gataatctgc
22561 tccttctgaa tcataatatt gccatgcaag cacttcagct tgccctcata atcattgcag
22621 ccatgaggcc acaacgcaca gcctgtacat tcccaattat ggtgggcgat ctgagaaaaa
22681 gaatgtatca ttccctgcag aaatcttccc atcatcgtgc tcagtgtctt gtgactagtg
22741 aaagttaact ggatgcctcg gtgctcctcg ttcacgtact ggtgacagat gcgcttgtat
22801 tgttcgtgct gctcaggcat tagtttaaaa gaggttctaa gttcgttatc cagcctgtac
22861 ttctccatca gcagacacat cacttccatg cctttctccc aagcagacac cagggcgaag
22921 ctaatcggat tcttaacagt gcaggcagca gctcctttag ccagagggtc atctttggcg
22981 atcttctcaa tgcttctttt gccatccttc tcaacgatgc gcacgggcgg gtagctgaaa
23041 cccactgcta caagttgcgc ctcttctctt tcttcttcgc tgtcttgact gatgtcttgc
23101 atggggacat gtttggtctt ccttggcttc tttttcgggg gtatcggagg aggaggactg
23161 tcgctccgtt ccggagacag ggaggattgt gacgtttcgc tcaccattac caactgactg
23221 tcggtagaag aacctgaccc cacacggcga caggtgtttc tcttcggggg cagaggtgga
23281 ggcgattgcg aagggctgcg gtccgacctg gaaggcggat gactggcaga accccttccg
23341 cgttcggggg tgtgctccct gtggcggtcg cttaactgat ttccttcgcg gctggccatt
```

FIG. 28A-6

```
23401  gtgttctcct  aggcagagaa  acaacagaca  tggaaactca  gccattgctg  tcaacatcgc
23461  cacgagtgcc  atcacatctc  gtcctcagcg  acgaggaaaa  ggagcagagc  ttaagcattc
23521  caccgcccag  tcctgccacc  acctctaccc  tagaagataa  ggaggtcgac  gcatctcatg
23581  acatgcagaa  taaaaaagcg  aaagagtctg  agccagacat  cgaacaagac  ccgggctatg
23641  tgacaccggt  ggaacacgag  gaagagttga  aacgctttct  agagagagag  gatgaaaact
23701  gcccaaaaca  gcaagcggat  aactatcacc  aagatgctgg  aaatagggat  cagaacaccg
23761  actacctcat  agggcttgac  ggggaagacg  cgctccttaa  acatctagca  agacagtcac
23821  tcatagtcaa  ggatgcatta  ttggacagaa  ctgaagtgcc  catcagtgtc  gaagagctca
23881  gccgcgccta  cgagcttaac  ctattttcac  ctcgtactcc  ccccaaacgt  cagccaaacg
23941  gcacctgcga  gccaaatcct  cgcttaaact  tttatccagc  ttttgctgtg  ccagaagtac
24001  tggctaccta  tcacatcttt  tttaaaaatc  aaaaaattcc  agtctcctgc  cgcgctaatc
24061  gcacccgcgc  cgatgcccta  ctcaatctgg  gacctggttc  acgcttacct  gatatagctt
24121  ccttggaaga  ggttccaaag  atcttcgagg  gtctgggcaa  taatgagact  cgggccgcaa
24181  atgctctgca  aaagggagaa  aatggcatgg  atgagcatca  cagcgttctg  gtggaattgg
24241  aaggcgataa  tgccagactc  gcagtactca  agcgaagcgt  cgaggtcaca  cactttgcat
24301  acccgctgt   caacctgccc  cctaaagtca  tgacggccgt  catggaccag  ttactcatta
24361  agcgcgcaag  tcccctttca  gaagacatgc  atgacccaga  tgcctgtgat  gagggtaaac
24421  cagtggtcag  tgatgagcag  ctaacccgat  ggctgggcac  cgactctccc  cgggatttgg
24481  aagagcgtcg  caagcttatg  atggccgtgg  tgctggttac  cgtagaacta  gagtgtcttc
24541  ggcgtttctt  taccgattca  gaaaccttgc  gcaaactcga  agagaatctg  cactacactt
24601  ttagacacgg  ctttgtgcgg  caggcatgca  agatatctaa  cgtggaactc  accaacctgg
24661  tttcctacat  gggtattctg  catgagaatc  gcctaggaca  aagcgtgctg  cacagcaccc
24721  ttaaggggga  agcccgccgt  gattacatcc  gcgattgtgt  ttatctctac  ctgtgccaca
24781  cgtggcaaac  cggcatgggt  gtatggcagc  aatgtttaga  agaacagaac  ctgaaagagc
24841  taaacaagct  cttacagaaa  tctcttaagg  ttctgtggac  agggttcgac  gagcgcaccg
24901  tcgcttccga  cctggcagac  ctcatcttcc  cagagcgtct  cagggttact  ttgcgaaacg
24961  gactgcctga  ctttatgagc  cagagcatgc  ttaacaattt  tcgctctttc  atcctggaac
25021  gctccggtat  cctgcccgcc  acctgctgcg  cactgccctc  cgactttgtg  cctctcacct
25081  accgcgaatg  ccccccgccg  ctatggagtc  actgctacct  gttccgtctg  gccaactacc
25141  tctcctacca  ctcggatgtg  atcgaggatg  tgagcggaga  cggcttgctg  gagtgtcact
25201  gccgctgcaa  tctgtgcacg  ccccaccggt  ccctagcttg  caacccccag  ttgatgagcg
25261  aaacccagat  aataggcacc  tttgaattgc  aaggccccag  cagccaaggc  gatgggtctt
25321  ctcctgggca  aagtttaaaa  ctgaccccgg  gactgtggac  ctccgcctac  ttgcgcaagt
25381  ttgccccgga  agattaccac  ccctatgaaa  tcaagttcta  tgaggaccaa  tcacagcctc
25441  cgaaagccga  actttcggcc  tgcgtcatca  cccagggggc  aattctggcc  caattgcaag
25501  ccatccaaaa  atcccgccaa  gaatttctac  tgaaaaaggg  taagggggtc  taccttgacc
25561  cccagaccgg  cgaggaactc  aacacaaggt  tccctcagga  tgtcccaacg  acgagaaagc
25621  aagaagttga  aggtgcagcc  gccgcccca   gaagatatgg  aggaagattg  ggacagtcag
25681  gcagaggaag  cggaggagga  ggacagtctg  gaggacagtc  tggaggaaga  cagtttggag
25741  gaggaaaacg  aggaggcaga  ggaggtggaa  gaagtaaccg  ccgacaaaca  gttatcctcg
25801  gctgcggaga  caagcaacag  cgctaccatc  tccgctccga  gtcgaggaac  ccggcggcgt
25861  cccagcagta  gatgggacga  gaccggacgc  ttcccgaacc  caaccagcgc  ttccaagacc
25921  ggtaagaagg  atcggcaggg  atacaagtcc  tggcgggggc  ataagaatgc  catcatctcc
25981  tgcttgcatg  agtgcgggg   caacatatcc  ttcacgcggc  gctacttgct  attccaccat
26041  ggggtgaact  ttccgcgcaa  tgttttgcat  tactaccgtc  acctccacag  cccctactat
26101  agccagcaaa  tcccggcagt  ctcgacagat  aaagacagcg  gcggcgacct  ccaacagaaa
26161  accagcagcg  gcagttagaa  aatacacaac  aagtgcagca  acaggaggat  taaagattac
26221  agccaacgag  ccagcgcaaa  cccgagagtt  aagaaatcgg  atctttccaa  ccctgtatgc
26281  catcttccag  cagagtcggg  gccaagagca  ggaactgaaa  ataaaaaacc  gatctctgcg
26341  ttcgctcacc  agaagttgtt  tgtatcacaa  gagcgaagat  caacttcagc  gcactctcga
26401  ggacgccgag  gctctcttca  acaagtactg  cgcgctgact  cttaaagagt  aggcagcgac
26461  cgcgcttatt  caaaaaaggc  gggaattaca  tcatcctcga  catgagtaaa  gaaattccca
26521  cgccttacat  gtggagttat  cagccccaaa  tgggattggc  ggcaggcgcc  tcccaggact
26581  actccacccg  catgaattgg  ctcagcgccg  ggccttctat  gatttctcga  gttaatgata
26641  tacgcgccta  ccgaaaccaa  atacttttgg  aacagtcagc  tcttaccacc  acgccccgcc
26701  aacaccttaa  tcccagaaat  tggcccgccg  ccctagtgta  ccaggaaagt  cccgctccca
26761  ccactgtatt  acttcctcga  gacgcccagg  ccgaagtcca  aatgactaat  gcaggtgcag
26821  agttagcggg  cggctccacc  ctatgtcgtc  acaggcctcg  gcataatata  aaacgcctga
26881  tgatcagagg  ccgaggtatc  cagctcaacg  acgagtcggt  gagctctccg  cttggtctac
26941  gaccagacgg  aatctttcag  attgccggct  gcgggagatc  ttccttcacc  cctcgtcagg
27001  ctgttctgac  tttggaaagt  tcgtcttcgc  aacccgctc   gggcggaatc  gggaccgttc
27061  aatttgtgga  ggagtttact  ccctctgtct  acttcaaccc  cttctccgga  tctcctgggc
27121  actacccgga  cgagttcata  ccgaacttcg  acgcgattag  cgagtcagtg  gacggctacg
27181  attgatgtct  ggtgacgcgg  ctgagctatc  tcggctgcga  catctagacc  actgccgccg
27241  ctttcgctgc  tttgcccggg  aactcattga  gttcatctac  ttcgaactcc  ccaaggatca
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FIG. 28A-7

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27301 ccctcaaggt ccggcccacg gagtgcggat tactatcgaa ggcaaaatac actctcgcct
27361 gcaacgaatt ttctcccagc ggcccgtgct gatcgagcga gaccagggaa acaccacggt
27421 ttccatctac tgcatttgta atcaccccgg attgcatgaa agcctttgct gtcttatgtg
27481 tactgagttt aataaaaact gaattaagac tctcctacgg actgccgctt cttcaacccg
27541 gattttacaa ccagaagaac gaaactttc ctgtcgtcca ggactctgtt aacttcacct
27601 ttcctactca caaactagaa gctcaacgac tacaccgctt ttccagaagc attttccta
27661 ctaatactac tttcaaaacc ggaggtgagc tccaaggtct tcctacagaa aacccttggg
27721 tggaagcggg ccttgtagtg ctaggaattc ttgcgggtgg gcttgtgatt attctttgct
27781 acctatacac accttgcttc actttcctag tggtgttgtg gtattggttt aaaaaatggg
27841 gcccatacta gtcttgcttg ttttactttc gcttttggaa ccgggttctg ccaattacga
27901 tccatgtcta gacttcgacc cagaaaactg cacacttact tttgcacccg acacaagccg
27961 catctgtgga gttcttatta agtgcggatg ggaatgcagg tccgttgaaa ttacacacaa
28021 taacaaaacc tggaacaata ccttatccac cacatgggag ccaggagttc ccgagtggta
28081 cactgtctct gtccgaggtc ctgacggttc catccgcatt agtaacaaca ctttcatttt
28141 ttctgaaatg tgcgatctgg ccatgttcat gagcaaacag tattctctat ggcctcctag
28201 caaggacaac atcgtaacgt tctccattgc ttattgcttg tgcgcttgcc ttcttactgc
28261 tttactgtgc gtatgcatac acctgcttgt aaccactcgc atcaaaaacg ccaataacaa
28321 agaaaaaatg ccttaacctc tttctgttta cagacatggc ttctcttaca tctctcatat
28381 ttgtcagcat tgtcactgcc gctcacggac aaacagtcgt ctctatccct ctaggacata
28441 attacactct cataggaccc ccaatcactt cagaggtcat ctggaccaaa ctgggaagcg
28501 ttgattactt tgatataatc tgcaacaaaa caaaaccaat aatagtaact tgcaacatac
28561 aaaatcttac attgattaat gttagcaaag tttacagcgg ttactattat ggttatgaca
28621 gatacagtag tcaatataga aattacttgg ttcgtgttac ccagttaaaa accacgaaaa
28681 tgccaaatat ggcaaagatt cgatccgatg acaattctct agaaactttt acatctccca
28741 ccacacccga cgaaaaaaac atcccagatt caatgattgc aattgttgca gcggtggcag
28801 tggtgatggc actaataata atatgcatgc ttttatatgc ttgtcgctac aaaaagtttc
28861 atcctaaaaa acaagatctc ctactaaggc ttaacattta atttcttttt atacagccat
28921 ggtttccact accacattcc ttatgcttac tagtcttgca actctgactt ctgctcgctc
28981 acacctcact gtaactatag gctcaaactg cacactaaaa ggacctcaag gtggtcatgt
29041 cttttggtgg agaatatatg acaatggatg gtttacaaaa ccatgtgacc aacctggtag
29101 attttttctgc aacggcagag acctaaccat tatcaacgtg acagcaaatg acaaaggctt
29161 ctattatgga accgactata aaagtagttt agattataac attattgtac tgccatctac
29221 cactccagca ccccgcacaa ctactttctc tagcagcagt gtcgctaaca atacaatttc
29281 caatccaacc tttgccgcgc ttttaaaacg cactgtgaat aattctacaa cttcacatac
29341 aacaatttcc acttcaacaa tcagcattat cgctgcagtg acaattggaa tatctattct
29401 tgtttttacc ataacctact acgcctgctg ctatagaaaa gacaaaacata aaggtctagt
29461 attacttaga tttgatattt aatttgttct tttttttttt atttacagta tggtgaacac
29521 caatcatggt acctagaaat ttcttcttca ccatactcat ttgtgcattt aatgtttgcg
29581 ctactttcac agcagtagcc acagcaaccc cagactgtat aggagcattt gcttcctatg
29641 cactttttgc ttttgttact tgcatctgcg tatgtagcat agtctgcctg gttattaatt
29701 ttttccaact tctagactgg atccttgtgc gaattgccta cctgcgccac catcccgaat
29761 accgcaacca aaatatcgcg gcacttctta gactcatcta aaaccatgca ggctatacta
29821 ccaatatttt tgcttctatt gcttccctac gctgtctcaa ccccagctgc ctatagtact
29881 ccaccagaac accttagaaa atgcaaattc caacaaccgt ggtcatttct tgcttgctat
29941 cgagaaaaat cagaaattcc cccaaattta ataatgattg ctggaataat taatataatc
30001 tgttgcacca taatttcatt tttgatatac cccctatttg attttggctg gaatgctccc
30061 aatgcacatg atcatccaca agacccagag gaacacattc ccctacaaaa catgcaacat
30121 ccaatagcgc taatagatta cgaaagtgaa ccacaacccc cactactccc tgctattagt
30181 tacttcaacc taaccggcgg agatgactga aacactcacc acctccaatt ccgccgagga
30241 tctgtctgat atggacggcg gcgtctcaga acagcgactt gcccaactac gcatccgcca
30301 gcagcaggaa cgcgcggcca aagagctcag agatgtcatc caaattcacc aatgcaaaaa
30361 aggcatattc tgtttggtaa aacaagccaa gatatcctac gagatcaccg ctactgacca
30421 tcgcctctct tacgaacttg gcccccaacg acaaaaattt acctgcatgg tgggaatcaa
30481 ccccatagtt atcacccagc aaagtggaga tactaagggt tgcattcact gctcctgcga
30541 ttccatcgag tgcacctaca ccctgctgaa gaccctatgc ggcctaagag acctgctacc
30601 aatgaattaa aaaatgatta ataaaaaatc acttacttga aatcagcaat aaggtctctg
30661 ttgaaatttt ctcccagcag cacctcactt ccctccctcc aactcggta ttctaaaccc
30721 cgttcagcgg cacacttttct ccatacttta aaggggatgt caaattttag ctcctctcct
30781 gtacccacaa tcttcatgtc tttcttccca gatgaccaag agagtccggc tcagtgactc
30841 cttcaaccct gtctacccct atgaagatga aagcacctcc caacacccct ttataaaccc
30901 agggtttatt tccccaaatg gcttcacaca aagcccagac ggagttctta ctttaaaatg
30961 tttaacccca ctaacaacca caggcggatc tctacagcta aaagtgggag ggggacttac
31021 agtggatgac actgatggta ccctacaaga aaacatacgt gctacagcac ccattactaa
31081 aaataatcac tctgtagaac tatccattgg aaatggatta gaaactcaaa acaataaact
31141 atgtgccaaa ttgggaaatg ggttaaaatt taacaacggt gacatttgta taaaggatag
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FIG. 28A-8

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31201 tattaacacc ttatggactg gaataaaccc tccacctaac tgtcaaattg tggaaaacac
31261 taatacaaat gatggcaaac ttactttagt attagtaaaa aacggagggc ttgttaatgg
31321 ctacgtgtct ctagttggtg tatcagacac tgtgaaccaa atgttcacac aaaagacagc
31381 aaacatccaa ttaagattat attttgactc ttctggaaat ctattaactg atgaatcaga
31441 cttaaaaatt ccacttaaaa ataaatcttc tacagcgacc agtgaaactg tagccagcag
31501 caaagccttt atgccaagta ctacagctta tcccttcaac accactacta gggatagtga
31561 aaactacatt catggaatat gttactacat gactagttat gatagaagtc tatttccctt
31621 gaacatttct ataatgctaa acagccgtat gatttcttcc aatgttgcct atgccataca
31681 atttgaatgg aatctaaatg caagtgaatc tccagaaagc aacatagcta cgctgaccac
31741 atcccccttt ttcttttctt acattacaga agacgacaac taaaataaag tttaagtgtt
31801 tttatttaaa atcacaaaat tcgagtagtt attttgcctc caccttccca tttgacagaa
31861 tacaccaatc tctccccacg cacagcttta aacatttgga taccattaga gatagacatt
31921 gttttagatt ccacattcca aacagtttca gagcgagcca atctggggtc agtgatagat
31981 aaaaatccat cgcgatagtc ttttaaagcg ctttcacagt ccaactgctg cggatgcgaa
32041 tccggagtct ggatcacggt catctggaag aagaacgatg ggaatcataa tccgaaaacg
32101 gtatcggacg attgtgtctc atcaaaccca caagcagccg ctgtctgcgt cgctccgtgc
32161 aactgctgtt tatgggatca gggtccacag tgtcctgaag catgatttta atagcccttsa
32221 acatcaactt tctggtgcga tgcgcgcagc aacgcattct gatttcactc aaatctttgc
32281 agtaggtaca acacattatt acaatattgt ttaataaacc ataattaaaa gcgctccagc
32341 caaaactcat atctgatata atcgcccctg catgaccatc ataccaaagt ttaatataaa
32401 ttaaatgacg ttccctcaaa aacacactac ccacatacat gatctctttt ggcatgtgca
32461 tattaacaat ctgtctgtac catggacaac gttggttaat catgcaaccc aatataacct
32521 tccggaacca cactgccaac accgctcccc cagccatgca ttgaagtgaa ccctgctgat
32581 tacaatgaca atgaagaacc caattctctc gaccgtgaat cacttgagaa tgaaaaatat
32641 ctatagtggc acaacataga cataaatgca tgcatcttct cataattttt aactcctcag
32701 gatttagaaa catatcccag ggaataggaa gctcttgcag aacagtaaag ctggcagaac
32761 aaggaagacc acgaacacaa cttacactat gcatagtcat agtatcacaa tctggcaaca
32821 gcgggtggtc ttcagtcata gaagctcggg tttcattttc ctcacaacgt ggtaactggg
32881 ctctggtgta agggtgatgt ctggcgacg atgtcgagcg tgcgcgcaac cttgtcataa
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33301 cactgtgttg gtgaaaaagc acagctaaat caaaagaaat gcgattttca aggtgctcaa
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33841 agtaatatca tcgaagttgc tggaaatata atcaggcaga gtttcttgta aaaattgaat
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33961 cgcgctgcgc tccaacattg ttagttttga attagtctgc aaaaataaaa aaaaaacaa
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34081 agccacaggg tctccagctc gaccctcgta aaacctgtca tggtgattaa acaacagcac
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34201 gttagcatca gttaacgaga aaaaacagcc aacatagcct ttgggtataa ttatgcttaa
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34321 aatataatta tttctctgct gctgttcagg caacgtcgcc cccggtccct ctaaatacac
34381 atacaaagcc tcatcagcca tggcttacca gacaaagtac agcgggcacg cacaagctct
34441 aaagtcactc tccaacctct ccacaatata tatacacaag ccctaaactg acgtaatggg
34501 agtaaagtgt aaaaaatccc gccaaaccca acacacaccc cgaaactgcg tcaccaggga
34561 aaagtacagt ttcacttccg caatcccaac aagcgtcact tcctcttct cacggtacgt
34621 cacatcccat taacttgcaa cgtcattttc ccacggccgc gccgcccgt ttagccgtta
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SEQ ID NO:   12
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FIG. 28A-9
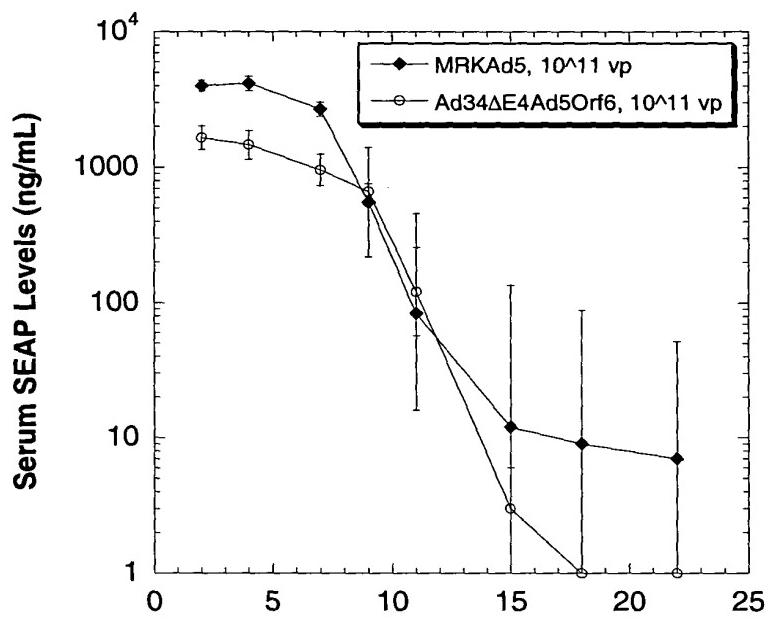
FIG. 29

Vaccine Wk 0, 4, 24	Monkey ID	Pre		Wk 4		Wk 8		Wk 24		Wk 28		Wk 36	
		Mock	Gag[a]	Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag
MRKAd5gag, 10^11 vp	00C018	1	5	13	1025	0	824	8	756	0	474	0	383
MRKAd5gag, 10^11 vp	00C034	0	4	5	219	5	404	3	445	3	339	0	216
MRKAd5gag, 10^11 vp	00C058	4	4	3	1086	0	440	4	1439	0	2338	0	940
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	00D038	6	8	5	111	1	301	0	224	1	536	0	233
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	00D042	6	30	4	89	4	264	1	73	0	181	0	69
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	00D066	3	18	1	118	1	816	0	429	0	439	0	273

FIG. 30

Vaccine	Monk ID	IFN-γ^+CD4$^+$CD3$^+$ per 10^6 Lymphocytes		IFN-γ^+CD8$^+$CD3$^+$ per 10^6 Lymphocytes	
		Mock	Gag^a	Mock	Gag^a
Ad34ΔE1gagΔE4Ad5Orf6	00D038	22	154	130	450
	00D042	32	118	96	171
	00D066	12	238	150	442

FIG. 31

Vaccine T=0, 4 wks	Vaccine T=24 wks	Monkey ID	Pre		T=4 wks		T=8 wks		T=24 wks		T=28 wks		T=32 wks	
			Mock	Gag[a]	Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag	Mock	Gag
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D016	4	6	1	84	5	334	5	99	0	306	3	244
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D044	1	1	8	79	0	374	8	136	0	493	1	253
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D064	4	6	1	125	8	655	6	145	0	351	1	236
Naïve		00D087	1	1	3	3	8	54	6	8	5	5	3	0

FIG. 32

Vaccine (T=0, 4 Wks)	Vaccine (T=24 Wk)	Monkey ID	IFN-γ^+CD4$^+$CD3$^+$ per 10^6 Lymphocytes		IFN-γ^+CD8$^+$CD3$^+$ per 10^6 Lymphocytes	
			Mock	Gag	Mock	Gag
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D016	62	433	176	1288
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D044	136	593	323	1871
Ad34ΔE1gagΔE4Ad5Orf6, 10^11 vp	Ad35ΔE1gagΔE4Ad5Orf6, 10^10 vp	00D064	188	785	292	992

FIG. 33